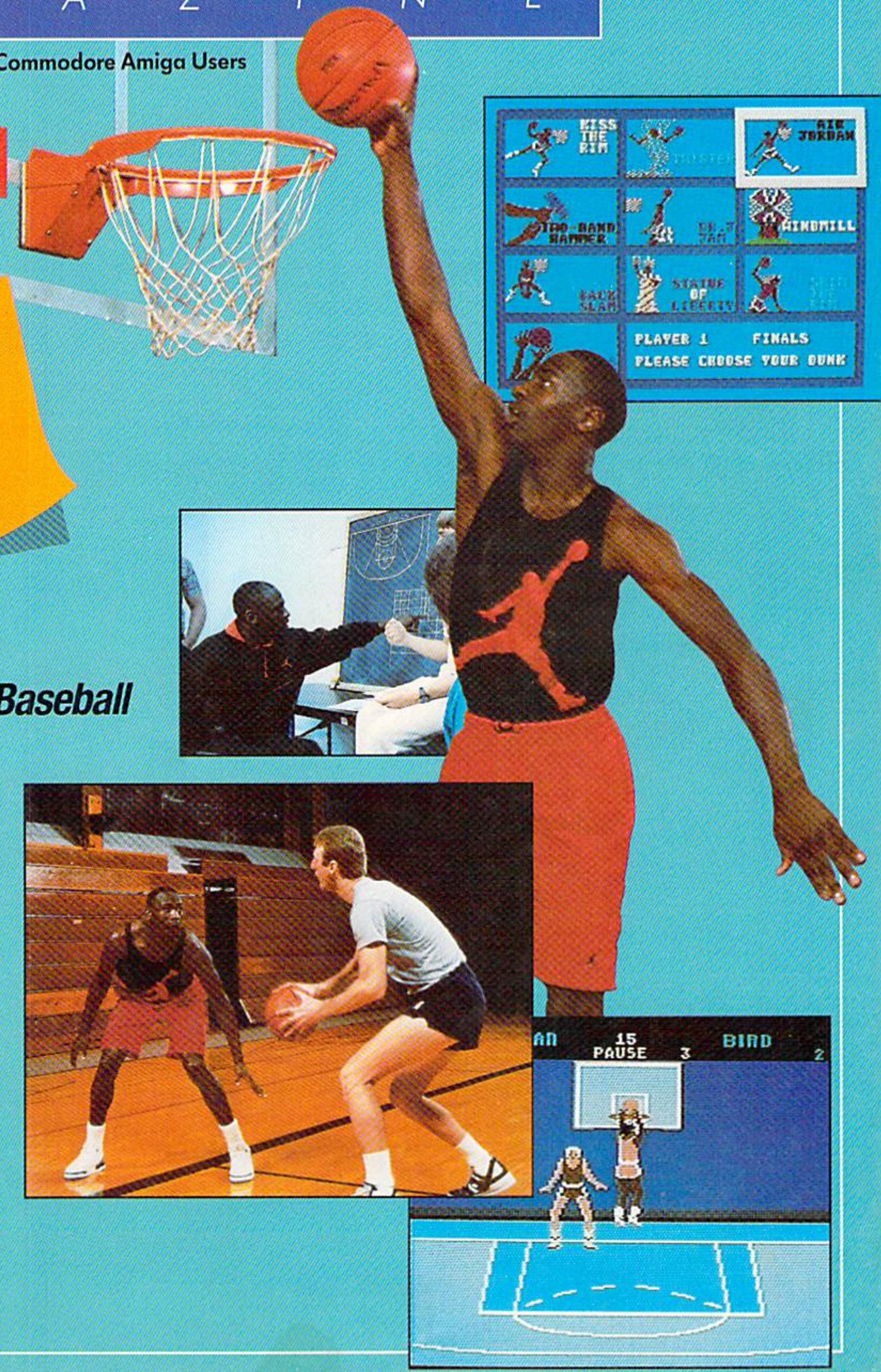
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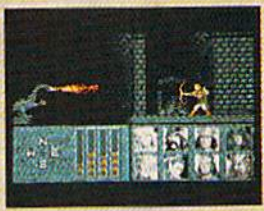
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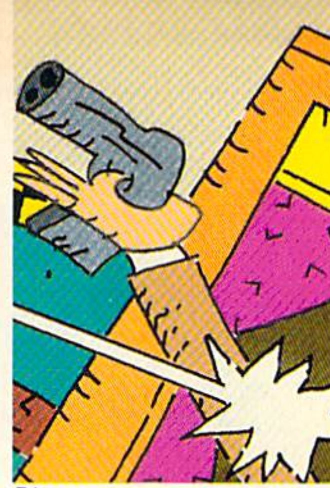
STRATEGIC SIMULATIONS, INC.

Commodore MAGAZINE

JANUARY 1989, *Volume 10, Number 1*



70



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FEATURES

COVER STORY

COVER PHOTO: *Photographs of Michael Jordon and Larry Bird are courtesy of Electronic Arts.*
Software: *Jordon vs. Bird: One on One* by Electronic Arts

REVIEWS

DEPARTMENTS



To the Editor:

Despite the fact that Graham Kinsey called me "author unknown" ("Amiga Public Domain," October 1988), I am actually the author of the Wheelchair Simulator program on Fish disk 139.

Over the past two years we have been working on this wheelchair simulation program in conjunction with therapists at the local Children's Hospital. We hope to get a new version including sound by January 1989. The program is interesting, as it is an attempt at doing real-time 3D animation.

Yours sincerely,
Dr. M.R. Smith, Professor
The University of Calgary
Calgary, Alberta
Canada

Editor's Response:

Thank you for bringing us up to date. We regret that we were unable to identify you as author of this innovative PD program that allows handicapped children to practice control of a motorized wheelchair. Please keep us informed of further developments.

To the Editor:

I have been faced with a problem I believe many other Commodore 64/128 owners have also encountered. My 1541 disk drive has served me well these past three years, but head alignment problems have finally taken their toll. I just spent $35 on alignment repairs, but it seems my drive is beyond help. Before I purchase a new drive, do you have any helpful tips on preventing head misalignment problems for as long as possible? Is head re-alignment eventually going to be necessary regardless of what I do with my drive?

Technical Editor's Response:

A majority of 1541's operate indefinitely with heavy use without the need for alignment (mine's a real trooper). To reduce "head bump" on the 1541, type the following in direct mode:

```
OPEN 15,8,15
PRINT#15,"M-W"CHR$(106)CHR$
(0)CHR$(1)CHR$(129)
CLOSE15
```

This will reduce "head bump" for most purposes, although it will not work with some types of software protection. If you have some unprotected disks that seem to bump excessively, transfer the files to another disk. Always use quality disks. Poor quality disks can make the drive lose sync information and cause unnecessary bumping. Insert disks with care to insure the hubs are seated properly. And remember, if you move your drive anywhere beyond your desk, place the cardboard head protector or a blank disk in the drive.

To the Editor:

I just wanted to let your readers know, if you're planning on upgrading to the Amiga, DO NOT plan on storing your Commodore 64 equipment away somewhere.

I bought a 64 about five years ago. During this time I've spent thousands of hours working and playing on my 64. This is truly a great machine. The only attention my 64 ever needed was a replacement power supply.

I have to honestly say I use my 64 *as much* as my new Amiga. Oh, I'm proud of the Amiga, don't get me wrong. But the 64, in its sixth year, unchanged mechanically, is still my favorite when it comes to home computers. When I had my new desk built, I had it made big enough to accommodate my 64 *and* the Amiga (they both run off a 1084 monitor). Remember, plan your space to accommodate your 64 equipment. You'll be glad you did!

Sincerely,
Steve Franklin
Bossier City, LA

Address letters for publication to:
Letters Editor, *Commodore Magazine*,
1200 Wilson Drive, West Chester, PA 19380

Commodore
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1200 Wilson Drive
West Chester, PA 19380
(215) 431-9259

Commodore Magazine, Volume 10, Number 1, January 1989.

Commodore Magazine is published monthly by Commodore Magazine Inc., 1200 Wilson Drive, West Chester, PA 19380. U.S.A. U.S. subscriber rate is $35.40 per year; Canadian subscriber rate is $45.40 per year; Overseas subscriber rate is $65.00 per year. Questions concerning subscription should be directed to Commodore Magazine Subscription Department, Box 651, Holmes, Pennsylvania 19043. Phone (800) 345-8112. In Pennsylvania (800) 662-2444.

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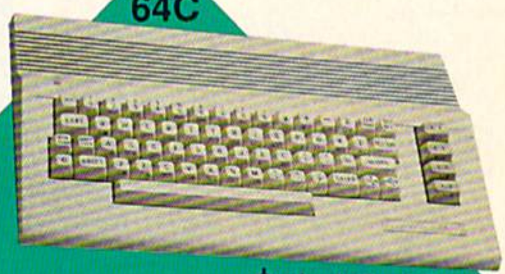
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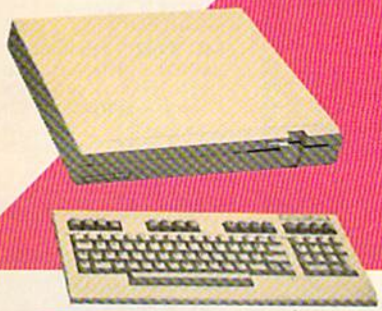
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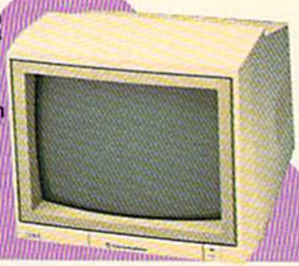


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Fast Break

Accolade's **Fast Break** for the Commodore 64 is a three-on-three full-court basketball simulation. On-screen menus similar to those in *Hardball!* and *4th & Inches* allow players to choose from 15 offensive and five defensive strategies. **Fast Break** sells for $29.95. For details contact: Accolade, 550 S. Winchester Blvd., Suite 200, San Jose, CA 95128. Or call: (408) 985-1700.

Taxaid

Who doesn't need a little help at tax time? Taxaid Software has released the 1988 edition of **Taxaid,** an income tax preparation program in versions for the Commodore 64, Commodore 128 and Plus/4. The menu-driven program includes all current changes in the tax law for 1988 and generates IRS-approved printouts. **Taxaid** retails for $49.95 (Updates for 1989 will be available for $18. Users of previous versions of **Taxaid** can also obtain an update for the current year.) For more information contact: Taxaid Software, Inc., 606 Second Ave., P.O. Box 100, Two Harbors, MN 55616. Phone: (218) 834-5012.

Modeler 3D

Modeler 3D, Aegis' latest Amiga release, lets the user create three-dimensional graphics which can then be animated with *Aegis VideoScape 3D.* The program also accepts images created with *Aegis Draw, Aegis Draw Plus* or *Aegis Draw 2000.* One megabyte of memory is required, however more memory and a second drive or hard drive are recommended. **Modeler 3D** has a suggested retail price of $99.95. For further information contact: Aegis Development, 2115 Pico Blvd., Santa Monica, CA 90405. Phone: (800) 345-9871, in CA (213) 392-9972.

Sketchpad 128

Take advantage of your 128's 80 columns with **Sketchpad 128** from Free Spirit Software. **Sketchpad 128** is a complete drawing system for use with the Commodore 128 and 1351 mouse. This menu-driven program comes with slideshow options, *Print Shop* and *BASIC 8* compatibility, and fonts. The 1581 3.5-inch disk drive is also supported. **Sketchpad 128** retails for $29.95. For details contact: Free Spirit Software, Inc., 58 Noble St., Kutztown, PA 19530. Or call: (215) 683-5609.



Pro Sound Designer

Pro Sound Designer from Precision Incorporated is a sound sampling system for the Amiga. The program lets you capture, manipulate and play back mono and stereo sound samples. The *MIDI-Plus* program that's included in the package allows you to take sounds recorded with the **Pro Sound Designer** and play them back with a MIDI keyboard. **Pro Sound Designer** retails for $159.95. For a limited time you can trade in your current sound digitizer and get $50 off. For details contact: Precision Incorporated, 8404 Sterling St., Suite A, Irving, TX 75063. Phone: (214) 929-4888.



Express Paint 3.0

If you've ever wished you could undo the last *five* changes you made to your Amiga masterpiece, you'll want to check out **Express Paint 3.0** from Brown-Wagh Publishing. This new version allows you unlimited "undo's" as well as a number of other upgraded features. **Express Paint**'s new virtual page option lets you create a picture of any size and any number of colors without running out of chip memory. Other new features include: 3D anti-aliasing tools, color cycling, and zoom or full-page viewing. **Express Paint 3.0** has suggested retail price of $139.95. For details contact: Brown-Wagh Publishing, 16795 Lark Ave., Suite 210, Los Gatos, CA 95030. Phone: (800) 451-0900.

Continued on page 10

Continued from page 8

Gold Disk Releases

Gold Disk has released four new programs for the Amiga. **ComicSetter** lets you create your own color comic strips with a library of characters, backgrounds and speech balloons. Design and drawing tools are incorporated for custom comics. **ComicSetter** retails for $99.00. Supplementary **ComicArt** disks with different themes are available for $34.95 each.

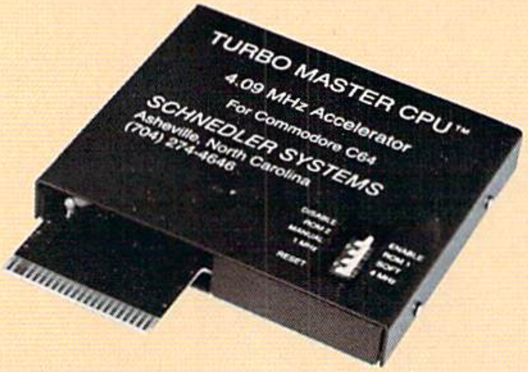




MovieSetter creates 32-color cartoon animation with stereo sound. Import IFF graphics or use built-in movie-clip files. Use the mouse to change characters' positions. The program features color cycling, playback at up to 60 frames per second, and linear and elliptical guides. **MovieSetter**'s suggested retail price is $99.95.

Gold Disk's structured drawing package, **Professional Draw,** provides control over color structured images. The program includes a number of drawing tools as well as transformation features such as mouse-controlled rotation, scaling, shearing and distortion. **Professional Draw** sells for $199.95.

Design-3D is a wire frame modeling program with six line types and 16 colors. The program provides four views—top, side, front and perspective—with four light sources. Designers can work in high-resolution, interlace or non-interlace. **Design-3D** retails for $99.95. For further information on these releases contact: Gold Disk, P.O. Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2. Or call: (416) 828-0913.



Turbo Master CPU

Turbo Master CPU is a replacement CPU for the Commodore 64 that plugs into the expansion port to provide four times faster processing speed. The Schnedler Systems product also includes turbo disk routines in ROM for five times faster disk loading and saving. **Turbo Master CPU** retails for $179 (post paid) and is available from: Schnedler Systems, 25 Eastwood Rd., P.O. Box 5964, Asheville, NC 28813. Phone: (704) 274-4646.

Lattice C Upgrade

Lattice, Inc. has released Version 5.0 of its AmigaDOS C compiler. The upgrade features full support for 68020 and 68030 processors and 68881 math co-processors. Faster library routines and improved ANSI compliance have also been incorporated. The Lattice Screen Editor is now included in the package. Suggested retail price of Lattice C is $300. Registered users of previous versions can upgrade to Version 5.0 for $75. Registered users of Manx Aztec C Compiler (version 3.4 or later) can upgrade to Lattice C for $150. Contact Lattice, Inc., 2500 Highland Ave., Lombard, IL 60148 for details. Or call: (312) 916-1600.

Victory Road

Data East USA's Ikari Warriors take up where they left off in the new Commodore 64 release **Victory Road.** This time the warriors, armed with super grenades, a flame thrower and a variety of guns, go up against four levels of enemies to conquer the Temple of Demons. This two-player contest retails for $29.95. For details contact: Data East USA, Inc., 470 Needles Dr., San Jose, CA 95112. Or call: (408) 286-7074.

Faery Tale 64

MicroIllusions has introduced a Commodore 64 version of their Amiga hit **Faery Tale Adventure.** You play the part of three brothers who venture forth from their village to recover the magic talisman that has kept their town safe. The talisman has been stolen by the evil Necromancer, whom you must pursue through 17,000 screens of castles and dungeons and oceans and bogs to restore peace upon your land. **Faery Tale Adventure** has a suggested retail price of $49.95. For further information contact: MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344. Phone: (800) 522-2041.


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Lou Sander's Tips & Tricks

Compiled by Louis F. Sander

January brings cold weather and new readers, both of which are honored in this month's column. We have several "January" programs, plus some elementary tips for beginners. As always, though, many of our expert readers can benefit from the simplest tips, and there's something here for YOU, no matter what your expertise.

Our long-awaited Tips & Tricks *book is moving along quite nicely. This soon-to-be-bestseller includes everything ever published in this column, corrected, amended and improved, and augmented by important new material. As of this writing, it's scheduled to be available in late March or early April. TAB Books' Windcrest division will be publishing it, and you'll be able to get it in your book store or directly from them. Watch for ads with the details.*

To get into print yourself, send your tips to:

Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237

If they're published, you'll get fame and at least ten dollars.

Eliminating Closing Quotes: It's well known that you can omit the closing quotation marks in a PRINT statement involving a string, provided the statement is the last thing on the program line. For example:

100 PRINT "JANUARY

works perfectly, even without quotation marks after the Y in JANUARY.

But not many people know that the closing quote can be left out in other situations as well, for example:

100 G$ = "NEW YEAR

establishes G$ as the eight-character string "NEW YEAR".

You can even eliminate the closing quote when establishing a null string, as is illustrated by this little program:

```
100 INPUT A$
110 IF A$="NULL" THEN A$="
120 PRINT "#";A$;"#",LEN(A$)
```

Run it, inputing various strings in response to the prompt. You'll see them printed out by line 120, preceded and followed by a pound sign, and followed by a number representing their length. When you input NULL, you'll see that A$ becomes the null string. The absence of a closing quote in line 110 has absolutely no effect.

The trick only works, of course, when the program line ends with the "missing" quotation mark. Anything else that follows it will be treated as part of the string.

Jim O'Neill
Whiting, NJ

Machine Type Detector: To tell the difference between a true 64 and a 128 in 64 mode, you can use

PEEK(53296)

If a 252 is returned, your machine is a 128 in 64 mode. A real 64 returns a 255.

David Kapsos
Portsmouth, NH

Auld Lang Syne: This program uses two SID voices simultaneously to produce a unique rendition of this bittersweet New Year's Eve song. Play it in 64 or 128 mode.

Joseph R. Charnetski
Plains, PA

```
100 PRINT"[CLEAR,RVS] AULD LANG SYNE
    - JOSEPH R. CHARNETSKI[SPACE2]"
110 FOR J=1 TO 118:READ K:CS=CS+K:NEXT
120 RESTORE:IF CS<>3271 THEN
    PRINT"ERROR IN DATA STATEMENTS!"
    :STOP
130 R=54272:FOR M=R TO R+23:POKE M,0
    :NEXT
140 POKE R+5,10:POKE R+12,10:POKE M,15
150 FOR J=1 TO 59:READ A,B
160 POKE R+1,A*2:POKE R+8,A
    :POKE R+4,33
170 POKE R+11,17:FOR S=1 TO B*149:NEXT
180 POKE R+4,32:POKE R+11,16:NEXT
190 POKE M,0
200 DATA 33,3,44,4,42,2,44,4,56,3,50,4
210 DATA 44,2,50,4,56,2,50,2,44,4,44,2
220 DATA 56,3,67,3,75,6,75,3,67,4,56,2
230 DATA 56,4,44,3,50,4,44,2,50,4,56,2
240 DATA 50,2,44,4,37,2,37,3,33,2,44,6
250 DATA 75,3,67,4,56,2,56,4,44,3,50,4
260 DATA 44,2,50,4,75,3,67,4,56,2,56,3
270 DATA 67,3,75,6,75,3,67,4,56,2,56,4
280 DATA 44,2,50,3,44,2,50,4,56,2,50,2
290 DATA 44,4,37,2,37,4,33,3,44,9
```

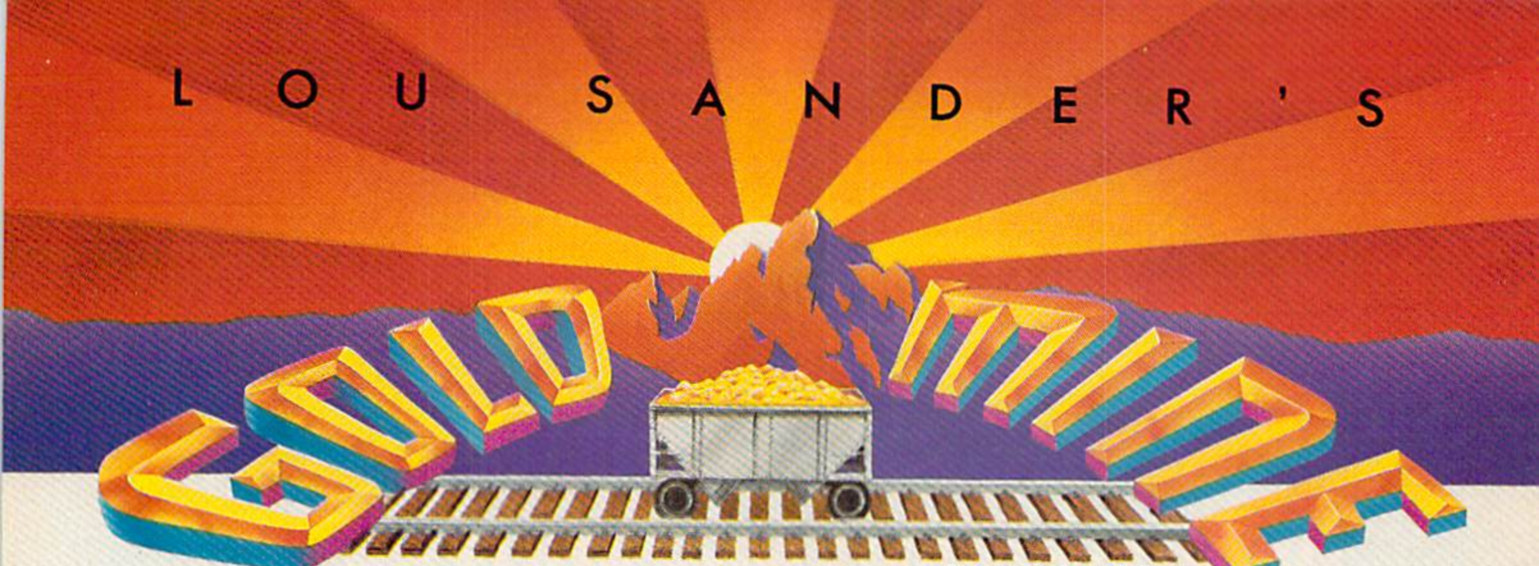
April Fools in January: If you want to give a 64 the appearance of being horribly out of order, try entering

POKE 53265,59

To exit, hold down the STOP key and tap the RESTORE key.

Chris Deck
Orange Park, FL

Continued on page 103



Compiled by Louis F. Sander

Here are more great game tips, guaranteed to amuse and excite you. Since many of these games are available for the Amiga, 64 and 128, a given tip may or may not work on your own machine. But from all we can tell, most of them work on any machine, whether it be from Commodore, Apple, Atari or IBM.

Of course, since so many games and machines are covered, there's no way we can test every tip that we print, so there may be some fool's gold among all these nuggets. And don't overlook the fact that many tips require skill as well as knowledge.

Send your own Commodore game tips to:

The Gold Mine
P.O. Box 101011
Pittsburgh, PA 15237

Use a separate sheet of paper for each game, and combine all tips for one game onto one sheet. Please put your name and address on each sheet so we can give credit where credit is due. And whatever you do, remember—Gold Mine Rules!

Alternate Reality: The Dungeon: To defeat the Great Wyrm at his lair on level 3, three things are highly recommended. First, use Panther Gloves as your weapon. (They give great punching power to your bare hands.) Your Strength should be at least 100, which will let you hit the Wyrm for up to 300. If your Stamina is 75 or greater, you will be protected from the Wyrm's magic, particularly his Finger of Death.

You'll only have to hit the Great Wyrm ten times or so to defeat him. Afterwards, great riches will be yours in his lair. Grab as much as you can carry, and come back until the lair is stripped of all its valuables. Your high strength will help you carry all the gold, silver and jewels!
Jeff Towich
Whitehall, PA

Autoduel: Attack enemies from the side if possible. They'll usually end up shooting below you, giving you enough time to deliver significant hits.
Matt McLaine
Walterboro, SC

Beach Head II: During any part of the game, simultaneously press the "G" and "H" keys to pause the game. Press them again to restart. By holding them down, you can also observe the game's fantastic animation techniques "frame by frame."
Neil Nowatzki
Edinburg, ND

California Games: High Surfing scores can be made by staying in the tube for as much of the ride as possible. The judges will also award extra points if you do some aerial maneuvers when leaving the wave at the end of your time.
Brett Meyer
Rota, Spain

Championship Wrestling: While playing in competition, you can get a lot of points and beat just about everybody just by climbing the ropes and drop-kicking your opponent twice. Then climb the ropes again and dropkick him once when he gets up. When he's down, keep giving him leg drops until your score comes as close as it can to 745 without going over. Then pin him.
Joe Krulack
Plains, PA

Commando: After you break through the first barrier and meet the blue terrorists armed with missile launchers, go straight down the center. Don't stop until you are past them. Their missiles won't touch you, no matter how many terrorists there are. Happy hunting!
Wes Oren
San Angelo, TX

Destroyer: This program contains a wonderful three-voice airhorn, which you can blow by pressing F7 at any station. Be careful, though, since the airhorn will attract fire from enemy ships, subs and islands.
Neal Pynenberg
Kaukauna, WI

Dragon's Lair: To get 250 lives, execute POKE 3651,250 before entering RUN.
Tom Obarowski
Kew Gardens, NY

Echelon: Save your game before entering areas F3 or F6, since the Nuclear Bombs there will kill you. Keep still when fighting, as it's almost impossible to shoot straight while moving. Hover down from 10,000 M; it's too easy to crash using powered flight.

I can't give you the complete order of the Pirate Steps, but here are the sectors: C3, M12, L12, B8, E4, L6. Major Thomas Allen can supply the areas. Happy trails!
Matt McLaine
Walterboro, SC

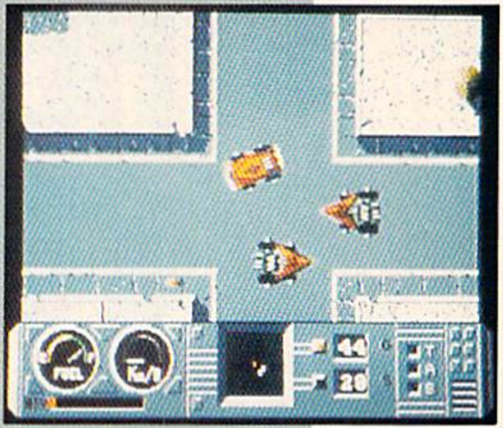
Continued on page 100

Reviewed by Mark Cotone

Road Runner

Computer: Commodore 64
Publisher: Mindscape Inc.
3444 Dundee Road
Northbrook, IL
Medium: Disk
Price: $34.95

Talk about resilience! Wile E. can be run over, blown up and shot a dozen times, and he'll just pause for a second, shake it off and keep on coming.



Ever since I can remember, Wile E. Coyote has been trying to make a meal of the Road Runner; trying, but never quite succeeding. He'd outfit himself with the latest Acme gadgetry, plot various death traps down to the last detail, and track his feathered foe from one end of the country to the other. And then, even when it seemed like he simply couldn't fail, he would. The Road Runner, often unaware of how close he was to extinction, would usually wind up innocently grazing at some peaceful roadside weed patch while Wile E. gingerly peeled himself off of a butte he had just kissed at the speed of sound.

You'd think by now the old dog would have died of either starvation, exhaustion or internal bleeding. I mean, this kind of bone-crushing self abuse has been going on for a good twenty years. But no, he just keeps on coming back for more, hustling through movie theaters, Saturday morning cartoons, comic books, and most recently, video games. Last year, Tengen brought this Warner Bros. odd couple to the arcades with their smash hit *Road Runner* coin-op. This year Mindscape brings it all home, and with it comes one of the best knee-slapping chases to ever dash across a Commodore screen.

As usual, the setting for this celebrated hunt is a patch of sun-soaked desert real estate nicely sliced by a single ribbon of fresh blacktop. The shoulders of this road —which is apt to change size and shape as it is traveled—will act as the boundaries of this contest. Your joystick is tapped into the *Road Runner,* the pursued. The computer will take stalking duties in the role of Wile E. Coyote. The object of the game, as far as you're concerned, is to avoid getting caught. You can sprint, stop, dodge, cut, double back, circle, and with a press of the fire button, leap into the air. It pays to be innovative, clever and quick, for the longer you can stay out of the coyote's clutches, the more points you'll collect. And in the end, high score wins.

Sounds pretty simple, eh? It never is. As you'd expect, the designers have made certain that the Road Runner will have to

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Tips From A Road Scholar

The one way this game differs from its cartoon inspiration is that in this contest, sooner or later, the Coyote will catch you. Your job is to postpone the inevitable as long as possible. To aid you in your cause, I've compiled a few helpful hints.

• In an attempt to keep the hunt as competitive as possible, the computer will outfit Wile E. with a skateboard any time your superior speed moves you so far ahead that your pursuer slips off the back edge of the screen. As a sidewalk surfer, the Coyote will become a faster more maneuverable foe, and evasion will become a more difficult task. To avoid the stiffer challenge, pace yourself. Any time you open a lead that threatens to push your opponent out of sight, slow down so that he can regain some distance and remain visible. Your patience will be rewarded.

• Even when you're in the clutches of the Coyote and he's carrying you off to dinner, don't give up the fight. Although you are captured and your turn has technically ended, every so often Wile E. will inadvertently step on a forgotten land mine as he's escorting you off the screen. When the explosion goes off, sometimes you can wrestle away from your surprised captor before he realizes what hit him. But you must be prepared to act swiftly, so keep a grip on your joystick and an eye on the screen.

• Whenever you are captured moving across the third section of this challenge, the program will push you back down the road a ways to establish a new starting point for your next Runner. This penalized distance is not always the same, and the area's crisscrossing road configurations are so similar that it can become hard to determine exactly where you've been placed. Since this section's route to victory is based on memorization, if you're lost you could be at a distinct disadvantage. To protect against such an occurrence, use the old hikers' trick and make note of all of the background landmarks positioned at each intersection. Then you should then be able to get your bearings and prepare for the approaching blacktop by looking off the road and checking your surroundings.

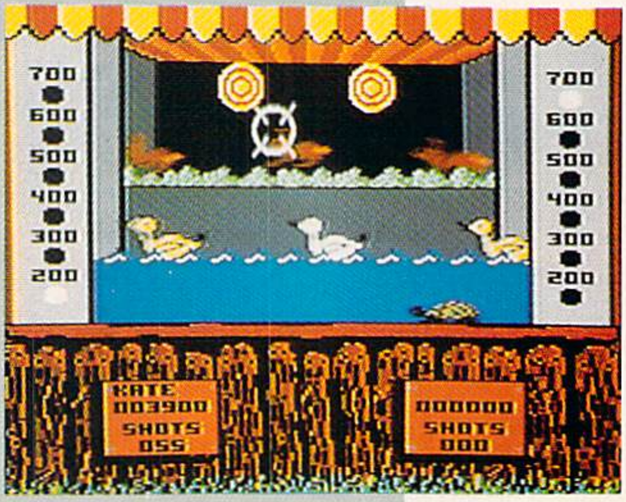
• If you stop to watch Wile E. as he runs, you'll notice that as he moves forward, he also moves up and down in a slight wave-like fashion. If you're ever in a tight corner and the Coyote is closing in for the kill, use his predictable running pattern to your advantage. Even on the narrowest of roadways you can often give your nemesis the slip by waiting for him to hit the farthest point on either end of his wavering course, and then bolting past him on the opposite side. Timing is everything, and the move will take some practice. But with a bit of work, you'll soon have Wile E. hugging nothing but air.

Reviewed by Scott A. May

Clubhouse Sports

Computer: Commodore 64
Publisher: Mindscape Inc.
3444 Dundee Road
Northbrook, IL 60062
Medium: Disk
Price: $29.95

What may first appear to be a kiddie show will quickly change your mind with its fast, demanding play action.



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How about a complete indoor game room, filled with six of your favorite arcade amusements—a shooting gallery, pinball, skeeball, foosball, bumper pool and a billiards table. All for one low price and small enough to fit inside your computer monitor. Sounds too good to be true!

But it is. This deal of the century (well, of the year, anyway) is brought to you by Mindscape's Clubhouse Sports, a feisty little party pleaser if there ever was one. There's so much solid entertainment value packed into this single disk, you'll be convinced that fantasy rec room is finally yours.

Clubhouse Sports was created by Ed Ringler and serves as a marvelous companion to his earlier Mindscape hit, *Indoor Sports*. Ringler is nothing less than an extraordinary sports game designer. His past credits include Gamestar's *On-Court Tennis,* as well as Mindscape's *Superstar Soccer* and *MISL Soccer. Clubhouse Sports* represents his most polished work to date.

Shooting Gallery

Step right up and try your luck at this venerable arcade classic. What may first appear to be a kiddie show will quickly change your mind with its fast, demanding play action. This game is full of surprises and can be lots of fun.

Four modes of play are available in the game—demo, solo, one or two player. The computer opponent has five skill levels, including "floating," which allows the computer to play up to its opponent's ability.

Other pre-game parameters include custom gun design. Here you may adjust speed, weight and recoil for added difficulty. Finally, choose the length of your game from a fixed number of shots or a set time limit.

Graphics in the Shooting Gallery are superbly drawn and humorously animated. The constantly-moving targets offer the right amount of variation and challenge to sustain a player's interest, regardless of age.

This game's only sore point stems from poorly-designed gun sights in the two-player mode. The tiny crosshairs are easily lost in the background graphics, causing slight frustration.

HINT: Go for the higher point targets, but don't hesitate or wait for the right one to appear. It's better to hit a lesser target than none at all. A few wild shots are all it takes to give your opponent the winning lead.

Skeeball

Here's the famous penny arcade game that almost everyone's played, but few can claim to be any good at. Now's your chance.

The object is to roll a heavy ball off a ramp and into a ring of six concentric circles. The closer you get to the center, the higher your score. The computerized version simulates the challenge of judging distance by offering resistance in the middle of the rings. This forces the player's crosshairs away from the center—not unlike two opposing magnets—to make aiming more difficult.

Pre-game parameters are nearly identical to the Shooting Gallery. Games may be played against the clock or with a fixed number of balls. Five overall difficulty settings change the power of the center resistance.

HINT: Because the crosshairs are impossible to hold steady, use a sweeping motion to cross over the center of the rings and time your shots accordingly. When playing against the clock, fire as fast as possible.

3D Pinball

This one features a full table design, including the backboard and front coin slot. You are almost tempted to rest your soda on the glass top while you play.

The game can be played by either one or two players using three or five balls. Up to four extra balls are available during the game. Difficulty levels are set by adjusting the table's angle, from low (slow) to medium and high (fast). Finally, flipper control may be assigned to a single joystick or to both.

The game provides a realistic simulation, especially when the table is set high for fast action. The 3D effect is well done, particularly the ball, which grows larger as it nears the bottom of the screen.

Although great looking, the game cries out for more features. Not quite up to par with classics such as *David's Midnight Magic* or *Night Mission Pinball*.

HINT: As in real pinball, jostle the table (joystick up) to get more points on the bumpers. This can also save balls from go-

Continued on page 106

JUDGE A GAME BY ITS COVER.

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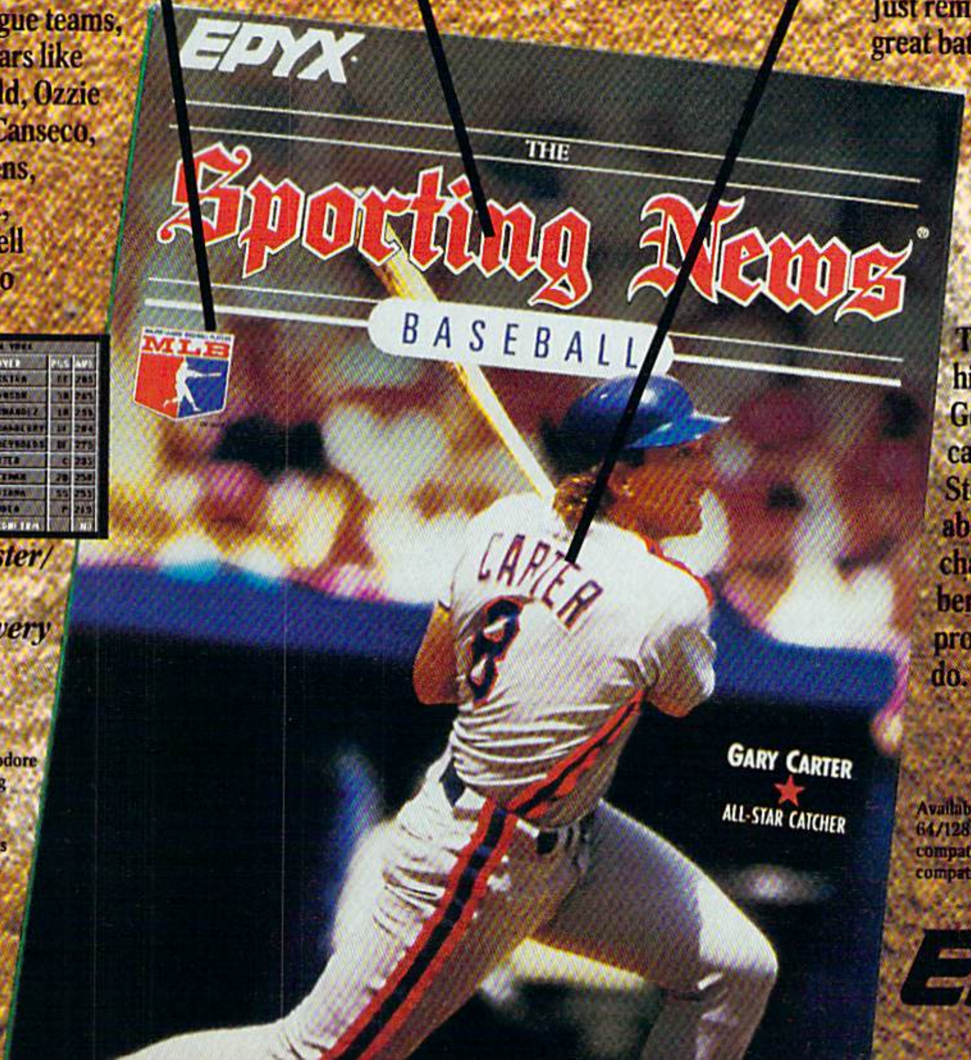


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EPYX®

Reviewed by Scott A. May

Renegade

Computer: Commodore 64
Publisher: Taito Software, Inc.
267 W. Esplanade
North Vancouver, B.C.
Canada
Medium: Disk
Price: $34.95

Beware—this is one mean, violent game. It taunts the player, starts adrenaline pumping and then goes for the throat. Frustration levels run high in *Renegade*, but that's just part of its design. It succeeds brilliantly.

Renegade is a game of urban survival that uncorks some pretty dark human emotions: anger, distrust, cruelty and revenge. If this sounds like the possible target for some software vigilante group, it is. This is also the type of game that could stir controversy and love every minute of it. In the end, it is only a sad reflection of modern culture.

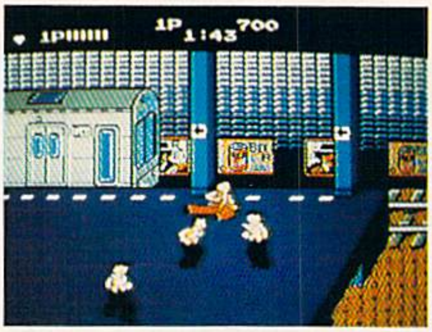
On the other hand, drawing deep, morose conclusions from such a simple game must have the folks at Taito tickled. This is, after all, just another reworking of an overdone genre: the kick-and-punch game. It's the realistic setting that will bother some people. The same game in a different context would generate only passing interest. Fighting for your life in an urban jungle, unfortunately, is right out of today's headlines.

The timing for *Renegade* is almost perfect, coming on the heels of New York's Bernard Getz case and the recent attention to Los Angeles street gangs. The game's scenario is certainly as frightening as any horror movie:

It's 2:00 a.m. and you're alone in the subway. Well, almost alone. The telltale snap of a switchblade knife cuts the silence. Suddenly you are face-to-face with a band of ruthless punks who begin attacking you, two and three at a time. Can you survive with only your fists and street smarts to guide you?

One school of thought says that anyone dumb enough to be alone in a subway at 2:00 in the morning deserves what they get. The stand *Renegade* takes is that you have the right to be anywhere you please at any time of the day. And anyone who tells you different just better watch out.

Renegade is a clean translation of the coin-op game that's reportedly a rage in



Europe. Movie buffs will also find sharp similarities between it and *The Warriors,* a controversial 1979 film about gang wars. Like the movie, *Renegade* is tough and exciting, moving at a lightning pace.

There are five levels to complete in this challenging one-player game. Each level moves the player to a new location, facing tougher adversaries. To advance from one level to the next you must dispose of an entire gang, then defeat their leader.

The top of the screen displays your current score as well as the energy levels for your character and the gang leader. You begin the game with two lives, earning another for each level completed.

The joystick moves your character in eight directions. Pressing the fire button results in a jump, kick or punch, depending on your current predicament. When attacked from behind, for example, unleash a vicious back kick. Or you might prefer a nice flying kick to the face, or a swift knee to the stomach. After knocking down an assailant, drop to the floor and punch his lights out. This is not a subtle game.

Level One unfolds on the subway platform. Here you will develop strategies and techniques to be used throughout the game. The gang is unarmed except for several members toting heavy clubs. Take out the weapon carriers first whenever possible. Generally, two knockdowns will remove an enemy from action.

On the right side of the platform is a dropoff. Position your character within two sidewalk cracks from the ledge and take a stand. Knocking down punks to your right will send them over the edge and out of the game.

The best way to score solid hits is to remain still and let them come to you. Sometimes even allow them to get in the first punch to assure the positioning is correct. Then simply kick the ones to your rear and pummel the ones in front with rapid punches. This tactic will often allow you to wipe out the entire gang with minimal damage.

Level Two takes you to a most unfriendly pier. Here you must defeat four hoods on motorcycles before confronting the rest of the gang, the Angels of Death. To knock the attackers off the cycles, perform a flying kick in their direction of travel. Be certain to time your jump precisely, or you may be flattened.

This gang is much tougher than their subway counterparts. Watch out for the punks wielding heavy chains, their attacks are quite painful. The pier also drops off to the left, but holding a strong fighting stance on this level is much more dangerous. When the odds turn against you, walk away and reposition yourself. Beware of the mohawked gang leader—his punches are killers.

Level Three moves the action to Sleezy Street, an appropriate title if there ever was one. Here you will face a gang of incredibly tough female marauders armed with clubs and whips. Their leader, Big Bad Bertha, would just love to get her hands on you. Avoid tangling with Bertha while her friends are around or else you won't stand a chance.

Level Four casts you into the heart of the city, on Mean Street. Face an entire gang of thugs armed with razors. Here you can rarely afford to take on two opponents at once, so move quickly and strike fast to avoid certain death. First rule of street fighting: never turn your back on a guy with a knife.

Defeating this gang brings you to Level Five, the Warehouse, where you'll find more razor-toting thugs and their grisly leader. This guy doesn't mess around—he carries a gun. It's a terrific ending to a perfectly rotten day. Defeat him and begin the whole ordeal again at a higher skill level. Right. Sure thing.

Renegade is one of the most challenging arcade games I've played. The graphics are so-so, but the action is fast and demanding. Above all, this is an infuriating game. You'll be tempted to throw more than just a few obscenities at the screen while playing this one. Player interaction runs very deep here, but it's all in good fun.

If indeed a controversy exists about this game, it only strengthens the entertainment value. Vibrant and alive, *Renegade* is hot and highly recommended.

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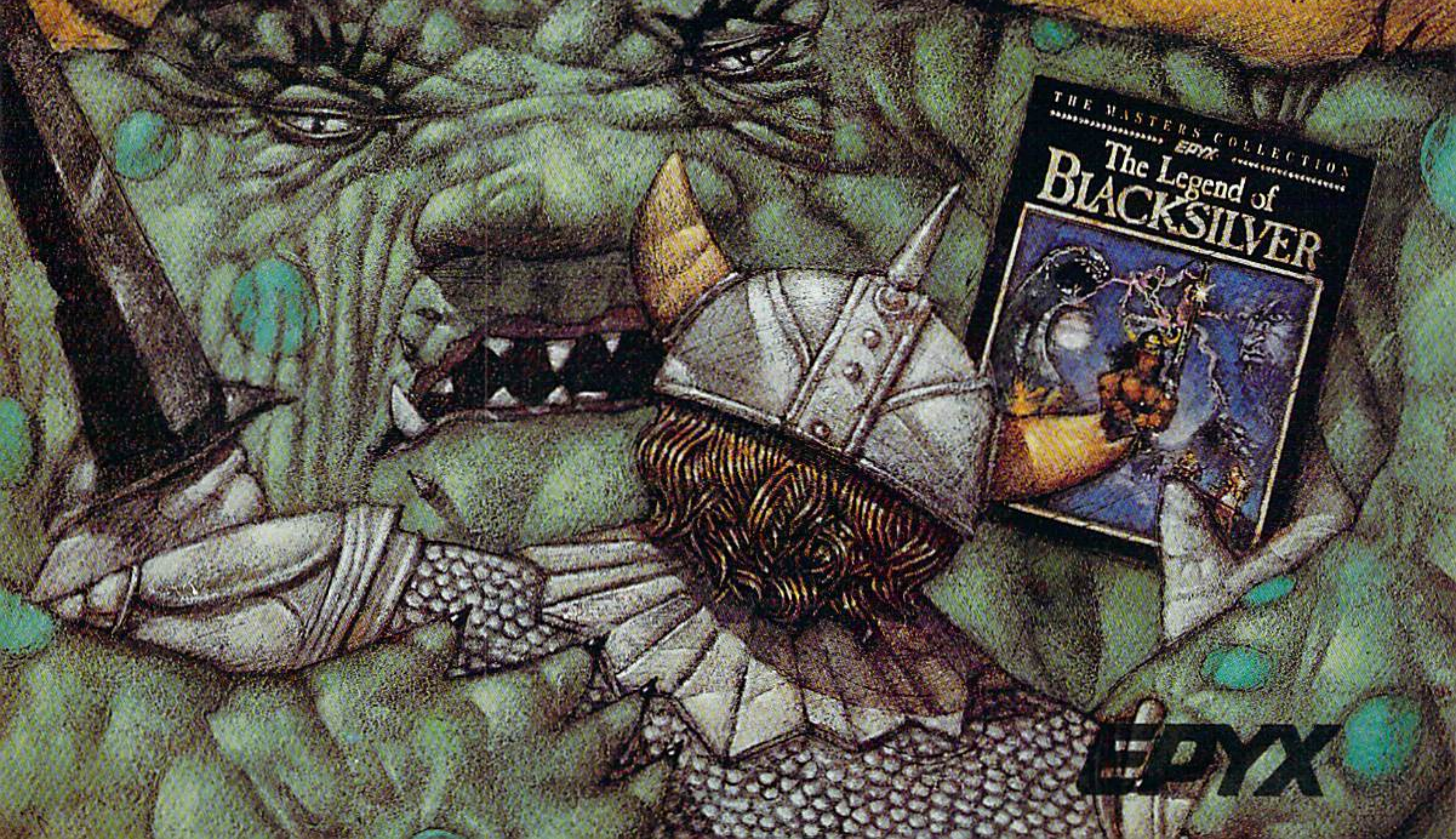
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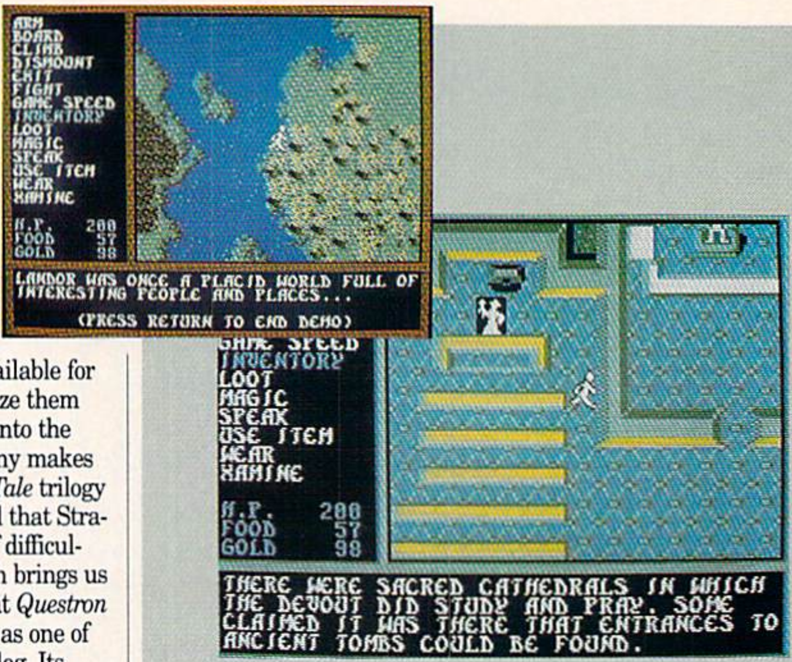
Apple II and compatibles, Commodore 64/128, IBM PC and compatibles. Screens from Commodore. © 1988 Epyx, Inc.



Reviewed by Russ Ceccola

Questron II

Computer: Commodore 64
Publisher: Strategic Simulations, Inc.
1046 N. Rengstorff Avenue
Mountain View, CA 94043
Medium: Disk
Price: $39.95



The tombs and the Hall of Visions are tantamount to your success in *Questron II*, and you must use both resources wisely.

There are so many role-playing games (RPG's) available for Commodore computers that it's tough to categorize them according to difficulty, since individual talents creep into the evaluation. It is also hard to determine which company makes the best RPG's. Naturally, the *Ultima* series, *Bard's Tale* trilogy and *Wizardry* series stand out. Other than these, I feel that Strategic Simulations, Inc. (SSI) has the widest variety of difficulties, themes and game play as far as RPG's go. Which brings us back to my first thought. Although I wouldn't say that *Questron* is the easiest RPG that SSI offers, it certainly stands as one of the most straightforward fantasy RPG's in their catalog. Its unique single-character game play made control of the game that much easier. SSI has continued in this vein with the release of the sequel to *Questron*, unimaginatively called *Questron II*.

Questron II raises a very fundamental question: Did the events in the first game ever take place? This question arises because of the plot of *Questron II*—to travel back in time to prevent the Evil Book of Magic used by Mantor in *Questron* from ever being created. If this is the case, then would the first quest have been necessary? Yes, according to the manual, in time travel only events from the point of travel forward are affected by what is changed in the past—not the intervening years. This is a snappy way to make a new game out of an old idea—in fact, it's the first RPG "prequel" I can remember. Although this question arises, *Questron II* far surpasses its predecessor (successor?).

When you feel like playing a game with only one character, the *Questrons* are perfect. *Questron II* continues with the easy game play established by *Questron* and adds a few new features. As in the original, all available commands are on the screen, and selecting one involves cycling through the list using cursor keys, mouse or joystick—depending on the version played. Movement is just as easy to execute and the perspectives (overhead for towns, cathedrals, tombs, castles and outside; 3D for dungeons) are the same. In fact, the elements of the two games differ in only three major areas: plot, graphics and auto-mapping.

I'll go through these differences one at a time to fully describe the *Questron II* experience. The plot has already been explained—the new land hasn't. In *Questron*, you journey through the kingdom of Landor and the Realm of Sorcerers to find the Evil Book. There are six mad sorcerers who have been "contracted" by Mantor to create the Book. You must find them, stop them and destroy the Evil Book once and for all. However, because of the game's intermediate difficulty, this may take a while.

Helping you along the way is Mesron, the good sorcerer of *Questron*, who communicates to you via the Hall of Visions, a place not entirely unlike the Galactic Museum in *Legacy of the Ancients*. Not an unlikely coincidence, since the designers of *Questron*, *Questron II* and *Legacy of the Ancients* are the same people. Between communicating with Mesron for hints and exploring the many areas in Landor, you will most certainly finish your quest.

New to *Questron II* are over 60 monsters. None of the monsters from *Questron* are duplicated in Landor—a seemingly unrealistic transition. Instead, a new batch was thought up for the prequel. These are a vast assortment of nasties, the worst are in the Realm of Sorcerers. Read about them before you try to fight them. Some need not even be fought to finish the game; you should talk to them instead. Because you are the only adventurer in *Questron II*, you have to be in control at all times—even in the most hectic battles. Learn how different weapons will affect creatures, and keep them on hand for those times when you really need them.

The graphics in *Questron II* are superb. Surprisingly, the graphics in the Commodore 64 version of the game approach those of the Amiga version. The Amiga's colors are brighter and the picture crisper, but the scenes are essentially the same for both versions. Don't expect to find too many differences. In particular, dungeons offer a new perspective on affairs. As you approach an item in the dungeons, it gets bigger on the screen. In *Questron*, this didn't happen. Also, when attacking creatures approach your adventurer, they get larger until they fill your view area of the dungeon. At this point, avoidance is impossible, and you better hope you brought a weapon good enough to down that nasty.

The auto-mapping feature added to *Questron II* is very helpful. It draws a top-view picture of where you have been in the dungeon level. I have become spoiled by auto-mapping games and find it hard to go back to an RPG that doesn't support this

feature. The screen is split down the middle in this view, with the dungeon-level view on the left and the overhead map on the right. Study this map carefully because hidden rooms and missing walls may appear after examination of the map.

In addition to the graphics, auto-mapping and different plot, there are many new sound effects to add to the list. Beeps and clicks are gone and audibly distinct explosions and alarms are heard with clarity. Having meaningful sound effects should be a must for any RPG designer. More often, RPGs are boring because you do what you have to on the screen, and the only reward for a well-played game is a special picture or animation sequence. With sounds stemming from reality, SSI has added an extra dimension (pardon the pun) to *Questron II* that separates it from the boring, substandard, silent games.

There are enough magic items and spells to satisfy the most avid magician-type.

With so much going for *Questron II* that is good, you may ask what the down side of the game is—if any. The down side rears its ugly head in the form of the copy protection. Every now and then, you have to enter a word from the game manual to continue. After two tries, the game crashes. This is an unfair system to be used for any game, let alone an RPG or fantasy game where you need to save your place often because of the complexity. If you fail to answer the question right, you may lose many hours of work to an ill-suited copy protection scheme.

Overall, *Questron II* has really impressed me with its new adaptation of an old game. I strongly recommend it for any RPG aficionado who needs a good challenge as well as the casual gamer who is interested in an RPG. Even magic is easy to use. The manual does not provide a good explanation of the place of magic in the *Questron* universe. You pretty much have to find out for yourself. There are the standard spells that you have used before in *Questron* and some new ones. Time Sap stops time and Sonic Whine takes care of all adjacent enemies. In any case, there are enough magic items and spells to satisfy the most avid magician-type. The great thing is that all of the magic has its place—there are no cases in which a magic item is really a "red herring," as is so often the case with magic in other RPG's.

A couple of more notes and then I'll let you get to your questing in Landor. The tombs are very special places. That is why they are guarded so well. Inside the corridors of the tombs are many treasures, keys necessary to solve the game and special items that are needed elsewhere. But don't venture into the tombs (or dungeons, for that matter) until you have increased your strength and agility enough to survive. Good magic and strong weapons wouldn't hurt either. The tombs and the Hall of Visions are tantamount to your success in *Questron*, and you must use both resources wisely to destroy the Evil Book and defeat the six mad sorcerers.

Questron II was everything I expected after hearing the advance word that it was being produced. I always liked *Questron* because you didn't have to memorize every command, and you could play at a leisurely pace—at least until it started getting important. *Questron II* brings back all of the factors I liked about *Questron* and concentrates them into a new form. Just remember not to cast spells that are in the Evil Book of Magic, and you'll survive with enough hit points to get rid of that hideous tome forever (maybe?).

Reviewed by Scott A. May

Sporting News Baseball

Computer: Commodore 64
Publisher: Epyx, Inc.
600 Galveston Drive
Redwood City, CA 94063
Medium: Disk
Price: $39.95

For those who've always wondered "what if," don your manager's cap and design the game of a lifetime.



In some circles, nothing is more sacred or intensely worshipped than baseball. The sport of the gods, they say. It should come as no surprise, then, that the ultimate computer baseball game bears the name of "the Bible of Sports"—*Sporting News Baseball*. Just call it divine intervention.

This Epyx release captures the best of both statistical and action-oriented game play. On the names and numbers side, it serves up a fascinating database of baseball legends, past and present. Choose from 26 major league teams, all accurately represented with each player's real-life 1987 batting and fielding characteristics.

For baseball purists, play it straight with a pre-selected American or National League team. For those who've always wondered "what if," don your manager's cap and design the game of a lifetime. It might be simple—or improbable—trade between opposing teams. Or it might enter the realm of fantasy, assembling a stellar team from over 150 baseball greats. Supplement young upstarts with past masters, or square them off in a head-to-head dream match. You have complete control here.

On the action side, *Sporting News Baseball* is a hard-hitting graphic feast. In terms of visual appeal and overall user friendliness, this one has its nearest competitor, Accolade's *Hardball!*, beat cold. That in itself is quite a compliment.

Games are played head-to-head with a friend or alone against the computer. The computer makes an enormously tough opponent, one that never grows tired of beating you at your own game. The computer may also play itself for pure statistical games. This mode is highly recommended for novice players for a number of reasons. It provides a sneak preview of the action, and gives some indication of the computer's playing style. It's also helpful for understanding the draft and how starting lineups and batting order affect individual and team performance.

After deciding on mode of play, managers are required to pick a pre-selected team or building your own. In-house teams include all 26 American and National League organizations. American League teams are allowed to use designated hitters. This seemingly minor option is only a hint of the detail to come.

From here, both team managers may examine their rosters, add Hall of Fame players, use the computerized lineup, choose their own lineup, or trade players. My only complaint is the lack of true league play. There are no seasons, no records kept, just one-shot games. The team selection process must be repeated with each new game.

The game begins with a bird's-eye view of the baseball diamond as players scramble into position. Another curious, but realistic, detail: The crowd *never* stops cheering throughout the game, modulating the volume of its roar according to the action.

The action is viewed from several angles throughout the game. The predominant screen offers a ground-level, catcher's point of view behind home plate. This screen is a technical marvel, a product of true design genius. Featured here are seven statistical boxes framing a cluster of four active windows. All information is presented with high regard to natural aesthetics and maximum clarity. Everything just seems to fit together, as comfortably as an old glove.

An inning-by-inning line score at the top of the screen also features runs, hits and errors for both teams. Below this are three active windows displaying close-up views of first, second and third base. A larger center window contains the pitcher, home plate and the current batter. To the left are three vertical boxes indicating the number of balls, strikes and outs. Finally, the right side of the screen identifies the batter, pitcher and their vital statistics.

When each team has selected their play, a "ready box" lights up onscreen and the action begins. Far in the distance, the pitcher nods his head at the catcher's signals, checks each base, and goes into his windup. The batter, meanwhile, takes an automatic warm-up swing and prepares for the pitch. The graphics and animation here are nearly perfect.

Action is completely joystick controlled. Batting is both simple and extremely challenging. A box next to the batter indicates the strike zone. Inside the box are crosshairs used to aim the bat. Pressing the joystick button causes the batter to swing. When readying the batter for a pitch, secret signals may be given through the joystick for bunts and selective base stealing.

Pitching is also deceptively simple. Although the game features only four pitching styles—changeup, fastball, curve ball and slider—players have complete control of each throw. Moving the joystick during the pitcher's windup determines how the ball will travel: low, inside, etc. The longer

Continued on page 106


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STREET SPORTS SERIES BY EPYX

Commodore 64/128, Apple II & compatibles, IBM & compatibles, Amiga

Reviewed by Russ Ceccola

Speed Buggy

Computer: Commodore 64
Publisher: Data East USA, Inc.
470 Needles Drive
San Jose, CA 95112
Medium: Disk
Price: $29.95

Ever since the home computer market bloomed and the number of computers sold increased dramatically, the most popular games have been the translations of hit arcade games from the shopping malls and pool halls to the home systems. Perhaps it's just the notion that you don't ever have to spend another quarter on a specific game in the arcade that makes the home versions the hits that they are. I normally have that attitude whenever I receive a new arcade game translation in the mail—until I see the game in the arcade and find it necessary to show off my new-found talents to those crowds of teenagers who invade all shopping mall fun spots on weekends.

Fortunately for us weekend warriors, at least one company has dedicated themselves to bringing their most popular arcade games to home computers, so that our favorites can be immortalized forever in our software collections. Data East, a veteran of the arcades, has just released one of the biggest coin-takers of the recent past to the home consumers—*Speed Buggy.* In light of the movement for software companies to use the Amiga to reproduce the graphics and sounds of the arcade originals as well as the game play, *Speed Buggy* is a refreshing change. Data East's home version, like all the other games in their catalog, proves that you can capture all of the thrills, fun, responsiveness and strategy of the big-shot arcade games on a machine like the Commodore 64.

For those of you unfamiliar with *Speed Buggy,* the game places you in control of the vehicle of the title, with the goal to make it through five legs (or laps) of any of five obstacle-strewn courses that vary in difficulty, scenery and obstacle placement. You can jump your buggy in the air, or simply steer it around crash-causing objects, over bridges, through tunnels and up banks. You'll quickly find that *Speed Buggy* is very addictive. I can never put the game down without playing it seven or eight times. The games go so quickly

> Data East proves you can capture all of the thrills, fun, responsiveness and strategy of the coin-op games on the Commodore 64.

that you find yourself pushing the start button yet another time, trying to get further than before.

Your primary objective is to guide your buggy around obstacles at the greatest speed possible to make it to the end of a leg of the course and proceed to the next one. Although it sounds easy, there are a few less important goals that you will find yourself trying to meet along the way. These objectives require the correct avoidance of obstacles and use of items that increase your points.

There are many objects that you will come across in your travels along the courses of *Speed Buggy.* Some of these you won't see until the later legs in some courses, others are confined to only one or two courses. You can divide objects into those that waste your time and cause a crash and those that help to increase your score. The first set of objects will stop your buggy in its tracks and force you to build up speed from 0 kph by shifting to low gear and then back up again at the appropriate time. These objects include: boulders, fallen trees, bushes, fences, walls and other buggies. Steer away from all of these inhabitants of the track, and your stay in the scenery of each course will be made more pleasant.

The objects that increase your score are more interesting in their method of operation. You get points in *Speed Buggy* by riding along on the track. Even if you don't touch any of the bonus items, you still get points. Colored flags are strewn throughout the course. Every time you run one over, you get a certain number of bonus points. But that's not all! At the top of the screen, there are five flags in a row, one of each color in a randomly-chosen order. If you collect flags at any point in the game in the order of the row (with no limit on the number of flags between your goal flags), you get bonus points, the row of flags blinks, and every other flag you touch before the flashing stops counts toward the collection of a new set of ordered flags. If you move quickly, you don't have to worry about the colors of the new flags you touch after finishing off a set, and you head toward bonus points more readily.

After playing *Speed Buggy* for a while, you'll find that your mind is occupied with two things: finishing the leg of the course and collecting a complete set of colored flags. Collecting flags in order adds an extra dimension to the game for which the designers should be commended. You can also pass under gates (like slalom skiing gates) to collect the point total that appears on them. A special gate has the word "TIME" written on it, and if you pass under it, you collect two seconds on the clock for the next leg of the course. I've also noticed that if you touch flags after running under a TIME gate, it's as if you just collected a set of flags—you can run over flags in any order, and they get counted toward a new set.

If that isn't enough for you speed demons, you can jump your buggy high in the air as well as ride it on two wheels. Whenever you run over small rocks or tree stumps, your buggy immediately winds up on two wheels. You collect extra points for this little maneuver and are able to squeeze through tight spots on the track—through breaks in fallen trees, for example. Don't oversteer your buggy and you can stay on two wheels for a long while. However, it is easier to hit obstacles in this state. Another aid to your mastery of the courses is the ability to jump high in the air over obstacles. This happens when you run over a log in the road. You fly in the air and can steer to come down in strategic spots. The only problem with jumping is that you may miss flags and TIME gates. Be selective!

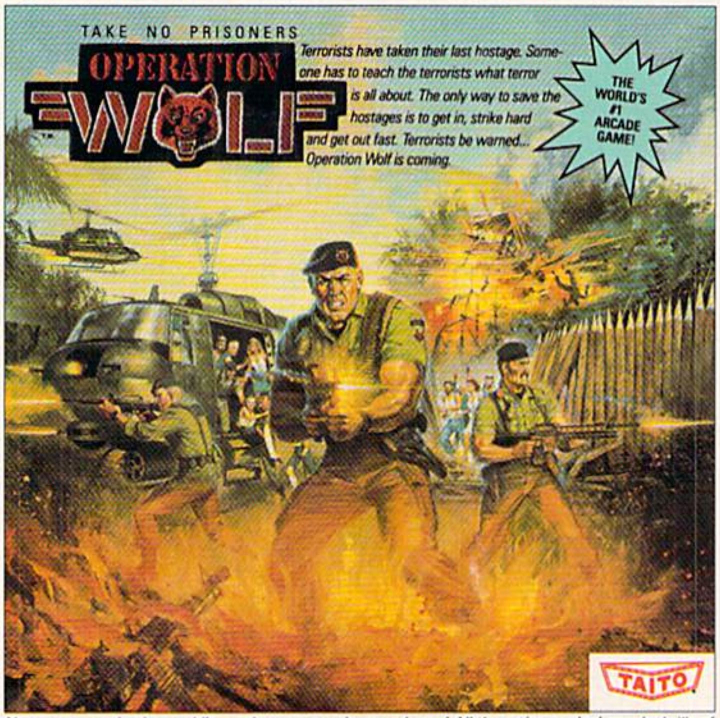
Score is not important in *Speed Buggy,* except for vanity's sake. During a game session, the top scores are ranked for each course and registered with the player's three initials. This is a nice touch, but it would have been much more effective if the high score tables were saved to disk. Most home versions of arcade games have this feature, and I can't understand why Data East didn't include this on *Speed Buggy.* Maybe there wasn't enough room left on the disk for such a table. Other than this little personal preference, *Speed*

Continued on page 108


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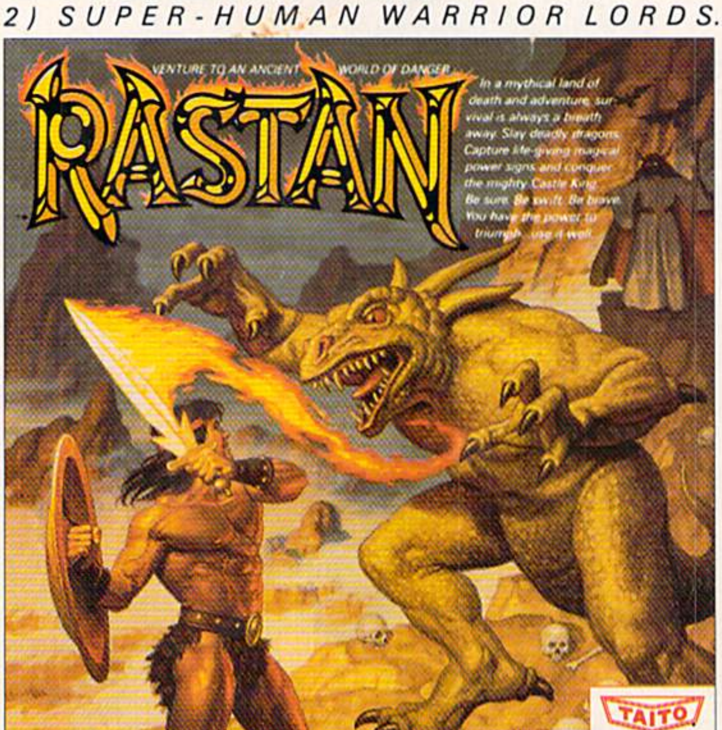
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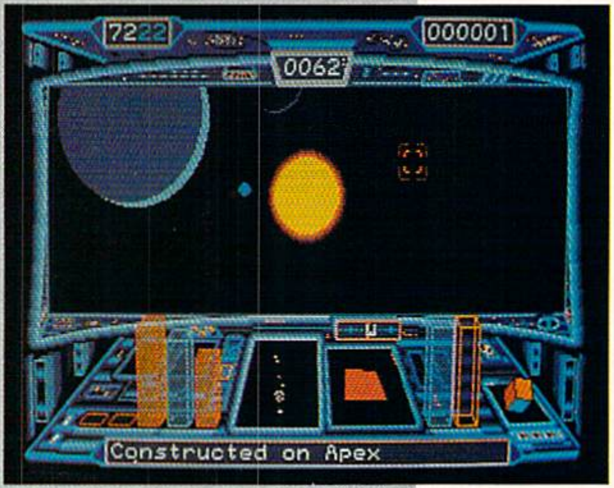
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Reviewed by Ervin Bobo

Starglider II

Computer: Amiga
Publisher: Rainbird Software
3885 Bohannon Drive
Menlo Park, CA 94025
Price: $44.95

Besides space pirates, you'll contend with space mines, planet-bound life forms, fuel and weapons shortages.



Here we go again. I've often railed against the Rainbird practice of inflicting novellas on those of us who wish only to play good computer games, and with *Starglider II* they're up to their old tricks.

Usually I advise readers to avoid the novellas as I do. In the most recent case, however, a certain 13-year-old in my household misplaced one of *Starglider II*'s three pieces of documentation, and I was forced to read part of the novella in order to learn the purpose of the game. The result, after about five pages, was intensified search efforts and dire threats; at last the third booklet was located.

Even the Playguide is written in a form that the folks at Rainbird seem to think is dramatic narrative, the difference being that the Playguide is necessary.

Once the written work is discounted or misplaced, you're left with *Starglider II*, which happens to be a very good game. The plot summary reveals that the Egrons are building powerful beam projectors on the seven moons of the planet Millway in order to protect a vast space station (a DeathStar?) that is under construction. The space station will be used against your home planet, so you must nip their nefarious plans in the bud.

To do this, you've been given command of the Icarus Starglider. Unfortunately, the ship has just finished its testing stages. While it is equipped with a stardrive, it has been stripped of all unnecessary weight, including the usual weapons complement.

In order to equip yourself with weapons and to refuel as necessary, you'll have to destroy pirate vessels and pick up their cargoes with your tractor beam or, in other cases, perhaps go from planet to planet and retrieve the components necessary to build weapons. Your single plasma laser will not be effective against your main target.

Alternative methods of refueling include capturing asteroids in your tractor beam and when they explode (as they will) make use of the methane particles released. Or use direct solar energy by skimming the corona of the sun. Either choice may be hazardous to your health.

The two great strengths of *Starglider* are the solar system and the control panel. The Soltices Systems consists of five planets and several moons, each with its own characteristics. With the routines built into the game it is possible to fly off the surface of one planet, zoom through space and land on the surface of another—in a continuous journey. Or you can skim the surface of a planet and watch the sky change from night to dawn to daylight. (Most planets in most space games are flat, and this does not occur.) Such routines speak well for the manner in which the graphics and the transitions are handled.

Each planet has different . . . well, life forms, and it will be up to you to decide whether they are hostile and if so how best to dispose of them. It may be that you'll have to go procure a special weapon and then return to do the job.

Not only can you skim over or land on the surface of the planets, you can also go through them thanks to a system of tunnels. Within these tunnels may be branching tunnels or even repair and refueling stations, and you'll need to look for them if you are to survive the game.

The control panel is before you at all times, giving *Starglider II* the look of a simulator, and it is a marvel. Conventional instruments have been replaced by holographic displays: for example, increase your speed and a transparent 3D bar (much like those on fancy bar charts) grows to show the relative increase; select a new weapon and a hologram of that weapon appears on the right side of the console, like the neutron bomb represented by a roiling mushroom cloud.

In the center of the control panel are a color radar screen and an attitude indicator which moves in three dimensions to show the current attitude of your ship. Weapons stores, shields and fuel are represented by 3D bars similar to the one described above.

Conventional "digital" displays at the top of the screen show your X–Y coordinates when skimming a moon or planet along with your score and a digital clock. At screen bottom is a message line to tell you of space mines, space pirates and other hazards. It's extremely helpful—it also tells you when you have been destroyed.

Control of your ship is by a mouse/keyboard or joystick/keyboard combination. I prefer the mouse because more controls can be operated with one hand. With the right button pressed down, speed is advanced or retarded; with no buttons pressed the flight attitude is controlled; the left button fires your plasma laser.

Besides space pirates, you'll contend with space mines, planet-bound life forms, fuel and weapons shortages and all the other things that make life worth living.

If you have only average arcade abili-

Continued on page 108

Reviewed by Gary V. Fields

CLImate and DiskMaster

Computer: Amiga
Company: Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
Price: $34.95 *(CLImate)*
$59.95 *(DiskMaster)*

Flexible program design means each user can customize *DiskMaster* to respond according to his or her personal needs.



CLImate and *DiskMaster* are both utility programs designed for Amiga users who are dissatisfied with either the Workbench's limited power or the CLI's (Command Line Interface) demanding command structure. Both programs perform like electronic hands which help the user squeeze all the power out of the Amiga's DOS (Disk Operating System)—intuitively.

Although both programs share some similar features, each has strengths which will appeal to different users. *CLImate* is simple to use and requires almost no knowledge of CLI. *DiskMaster*, the more powerful of the two, can also be put to work straight out of the box but has options which enable the user to do much more, including customize the program to fit particular needs. For that reason, *DiskMaster* will appeal to the more experienced and demanding user while *CLImate* will be welcomed by the entry-level Amiga owner.

CLImate

CLImate combines the best of both Workbench's and CLI's environments without inflicting the limitations of either native interface on the user. While Workbench is easy to use, it lets you work only with visible files which have icons (.info labeled files) attached to them. CLI's powerful advantage is that it lets the user issue commands directly to DOS, but its complexity can be very confusing, especially to new users.

CLImate gets around these two problems by combining the best of both in a format which both novice and expert users of the Amiga can handle and appreciate. Like Workbench, *CLImate* is mouse driven. To issue a command you simply point and click. But because the program goes far beyond Workbench's surface DOS controls, you can examine all the files and directories on a disk. And with little more than a click of the mouse, you can rename, delete, copy, move files; examine IFF files; print files or documents; and format disks.

Anyone who has ever tried to move a new printer driver (or any non-icon file) to Preferences will appreciate *CLImate*'s simple solution to that dilemma. If you know anything about CLI, moving a file (like a printer driver) from one disk to another is no trouble. But if you operate your Amiga from Workbench only, this task is impossible.

CLImate makes routine DOS chores simple. For instance, to move or copy a file (invisible to Workbench) you simply put the disk containing the file you want to move in one drive and the disk you want to move the file to in the other. Then you scroll through the directory of the destination disk until the printer DEVS directory is opened. Next you highlight the required file on the source disk and click on the icon labeled copy. The entire task takes less than two minutes. The same task could have been done as quickly from CLI, providing you knew the syntax of the required commands and the location and correct spelling of the directories and files you needed to move. Copying such a file would have been impossible using Workbench alone, since DEVS files do not have icons attached to them.

I agree that duplicating a file is a rather simple task and hardly justifies the purchase of a DOS utility program like *CLImate*. But the program is worth owning because it can do more than simply copy and move files. It will work with either one or two 3.5-inch floppy drives as well as a 5.25-inch drive. It works just as well with one or two hard disk drives and fully supports a RAMdisk. And because it creates a fast directory of every disk it examines (this feature can be toggled on or off), the access time required by DOS in future operations on that disk are greatly reduced.

CLImate fully supports multitasking and RAM expansions, so you can use it in tandem with other software. Its two display windows let you compare and manage files on two disks simultaneously and fail-safe prompts prevent you from accidentally changing or moving a file.

Two of the friendlier features of *CLImate* are its ability to both examine files (ASCII or HEX output) and dump them to paper. Nearly every commercial or public domain disk contains at least one "Read-Me" text file. To examine these files, all you need to do is highlight it and click the icon labeled DISPLAY. If you want a hard copy of the file, there is a friendly option here too. Again you simply highlight the filename and then click on the PRINT icon. The option lets you adjust margins, page lengths and include or exclude header information and the date. Another time-saving option for those who have a hard time managing a graphic library is the utility's ability to display IFF files (regardless the resolution). With it you can quickly view all your files, organize them according to content, rename those mislabeled and delete those you no longer need. The power of this option is that it lets you go through scores of graphics in a fraction of the time it would require using the original graphics program used to create them.

Despite *CLImate*'s power, it does lack some features. Its most serious sin of omission is the lack of a command to RUN programs. Oddly enough, though

Anyone who has ever tried to move a new printer driver to Preferences will appreciate *CLImate*'s simple solution to that dilemma.

you can do almost everything but edit a program from within the utility's shell, you can not run a program with it. This omission is most noticeable when using public domain programs which more often than not must be handled from CLI.

Another annoying flaw in the program is the way it moves directories. If you duplicate or move a directory from Workbench not only is the directory created, but its icon (graphic symbol) is as well. But when *CLImate* moves, duplicates or creates a directory, the icon (.info) file is not created. So if you are moving a directory from one disk to another, you must remember to move its ".info" file as well to be able to access it from Workbench.

One feature which *CLImate* has that no other DOS utility includes is the option to create "fast directories." This feature has attracted both praise and boos from users. Each time the program reads a directory for the first time, it creates and saves a file containing the filename. Then the next time you access that directory with *CLImate* it uses the fast directory file instead of wasting time reading each individual file. The original version of *CLImate* did this automatically, but the current version has an icon which you can activate so these "fast directories" are optional. As a hard drive user I like this feature, since it lets me access files almost instantly. Other users complained about the files this feature created and the amount of disk space (very little) they required.

There is one last annoyance I should mention. Each time you change a disk's contents using *CLImate* (providing the "fast directory" is on) it updates the "fast.dir" file. But if you update the disk with some other interface (Workbench, CLI, *DiskMaster*, etc.) the changes will not be recorded on the "fast.dir" file *CLImate* made and will not be visible to the utility unless you click on the "Read" feature. Until you understand what is happening this can be confusing. But all the "missing" files will appear as soon as you tell the program to read the real directory instead of the "fast.dir" file. Until I figured out what was happening, I feared *CLImate* was corrupting my files. Now that I know better and know how the program handles the directory information, I think the speed gained by "fast directory" far outweighs the inconveniences of occasionally having the program reread the disk's directory.

CLImate comes with a tiny but useless manual. There is nothing wrong with the manual (it's well written and informative), it's just that using the program is so intuitively designed that it doesn't require a manual. Thankfully, the program is not copy protected, so you can include it on your Workbench disk or any other disk you use regularly. And because it was designed with multitasking in mind, you can use it along with any other multitasking software.

DiskMaster

It never seems to fail—as soon as you feel comfortable with your system's setup, somebody introduces a "new and improved" product you can't resist. That scenario fits the introduction of *DiskMaster* perfectly. But what was surprising was that both *DiskMaster* and *CLImate* are marketed by the same company. My first question was whether the introduction of *DiskMaster* meant the demise of *CLImate*.

Continued on page 102


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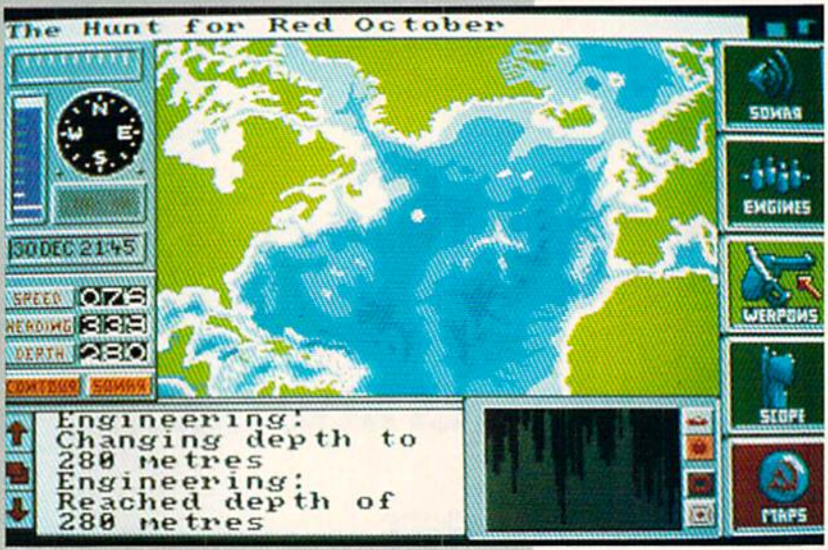
Reviewed by Russ Ceccola

The Hunt for Red October

Computer: Amiga
Publisher: DataSoft
19808 Nordhoff Place
Chatsworth, CA 91311
Price: $49.95

When was the last time you saw a book translated successfully in spirit and plot to a computer game? Doesn't happen often, does it? It certainly does in the case of *The Hunt for Red October,* the DataSoft game that is based on the best-selling book by Tom Clancy. *The Hunt for Red October* (*HFRO*) uses the fullest extent of the Amiga's power—from the detailed graphics and excellent sound effects to the speed and slickness of the game.

What made Clancy's book so popular that they decided to design a game around it? Why, the neat plot and presence of a unique submarine, of course. *HFRO,* both the book and the game, places you in the role of Marko Ramius, commander of the Soviet fleet's most prized possession, a submarine that can move virtually undetected by enemy radar—the *Red October.* You have decided to defect to America and have scheduled a rendezvous with Americans. There are many problems involved in defecting that you have to overcome to win the game.



You have decided to defect to America and have scheduled a rendezvous with Americans.

The secret system (caterpillar drive) that the *Red October* uses when it wants to propel itself silently through the water makes it a very important vessel and requires the presence of a political officer who would see through your plans and try to stop you. You've already killed him and sent a confession back to Moscow that also explains your defection. Your real orders were to patrol the eastern Atlantic. After killing the political officer, you changed the mission so that it points you to explore the eastern American seaboard for U.S. Navy vessels, a bogus mission that the political officer would have noticed. Moscow already knows you're trying to defect.

The enlisted men on the ship don't know of your plan to defect, but the rest of your officers do and are defecting with you or are ready to die trying. You have to not steer too far away from the course that your fraudulent plan involves, yet still make the rendezvous point with the Americans, where a leak from the nuclear power station will be staged to evacuate the crew of the *Red October* to a waiting American vessel. Pretending to go down with the submarine, you will switch the *Red October* for an aging American submarine, the Americans will obtain *Red October*, and you will have defected successfully.

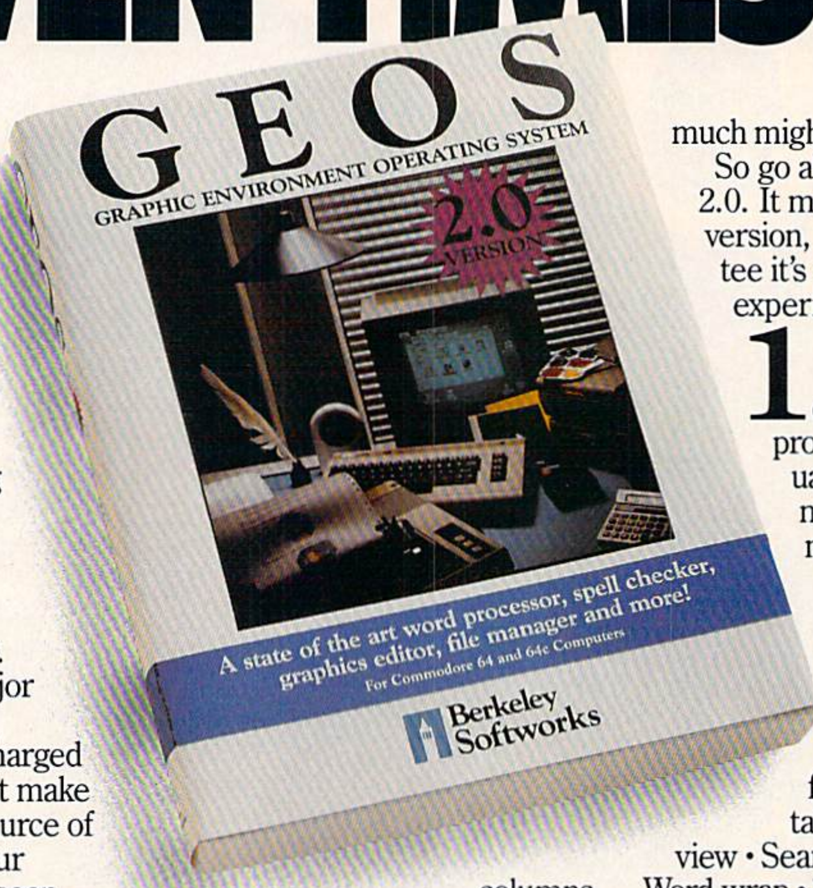
Unfortunately, there are still other problems that might come into play. First, if you threaten any American vessel, the Americans will join Russia in trying to find and capture you. The Americans' only goal is to obtain *Red October*—anything that you do that makes them lose faith in your desire to defect will turn them off immediately. So be careful. The Soviets have only one mission—to capture *Red October* and prosecute the renegade officers aboard—you included. Walking a fine line between the two powers is what made the book so successful and the game so fun to play.

In *HFRO,* you control the submarine in order to carry out the plot. You must avoid contact with all Soviet submarines and surface vessels, yet reach the rendezvous point with the Americans without showing any signs of hostility toward them. Control of the game is done entirely through the use of icons on the screen to relay your commands to the Amiga. Selection of icons calls up different screens, as well as menus and other choices. The bulk of your tasks in *HFRO* lies in the areas of navigation and identification of sonar traces.

The main screen of *HFRO* is divided into four areas: the message window, the main display window, the main control panel and the officer icons. The message window at the bottom of the screen beneath the main display window is where all sonar traces are seen. The windows also show interceptions of other ships' communications picked up by your Electronic Surveillance Manual (ESM) circuitry and the reports of changes made to the ship's navigation variables and other choices made by you from the officers of the ship: sonar, engineering, weapons and periscope. The main display window can have one of three views: the standard view

Continued on page 107

WE'VE GOT S
SEVEN TIMES BE



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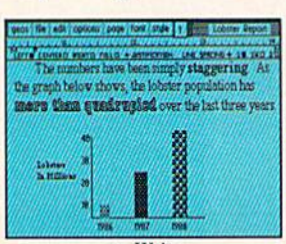
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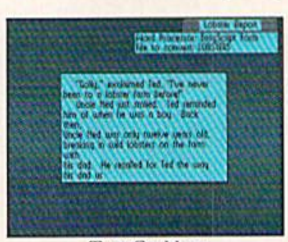
GEOS 2.0 is supercharged with new strengths that make it the most powerful source of integrated software your Commodore 64's ever seen. And what isn't completely new has been radically improved. In fact, we actually included other applications—products we used to sell separately—right into this package.

For example, the entire contents of geoWrite Workshop, including geoWrite 2.1™ (the full-featured word processor) have been added along with geoSpell.™ And a new feature lets you mix graphics with text around any number of columns.

It doesn't even matter if the text is from some other Commodore-based program. Because GEOS 2.0 converts it with one simple point and click.



geoWrite



Text Grabber



geoSpell

There's a new deskTop.™ A new painting toolbox. And new muscle that makes your mouse much mightier, for starters.

So go ahead. Try GEOS 2.0. It may be our second version, but we guarantee it's seven times the experience.

1. geoWrite 2.1: NEW! Full-featured word processor • Individual paragraph formatting • Expand margins to 8″ • Left, right, center and full justification • Multiple vertical spacing options • Headers and footers • Decimal tabs • Full page preview • Search and replace • Word wrap • 10 fonts in 7 styles and multiple sizes • Pagination • Insert, delete, move or copy • Mix text and graphics • Special feature to create multiple columns, add headlines and borders • Produce near-typeset quality output on an Apple® LaserWriter™ with PostScript.™

2. Text Grabber:™ NEW! Import text from any Commodore word processor such as

SOMETHING
TER THAN GEOS.

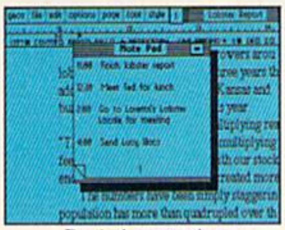
PaperClip,™ Easy Script,™ Speed Script,™ Word Writer™ and others.

3. geoMerge:™ NEW! Create customized form letters and labels with this mail merge program.

4. geoSpell: NEW! Complete spelling resource. View dictionaries and documents while spell checking • Create and update personal dictionaries • Global search and replace • Operates 38% faster than before.

5. Desk Accessories: Five handy utilities accessible from within any application • 4 function calculator • 127 page notepad • Chiming alarm clock • Preference manager • Photo/text managers to save and transfer data between applications • NEW! Cut and paste from the calculator and notepad into other applications • Name photo album pictures • And more.

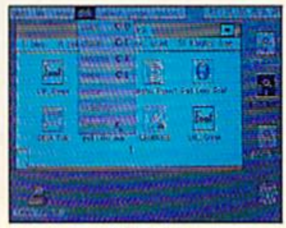
6. geoPaint:™ High resolution graphics editor. Create charts, diagrams or images up to 8″ × 10″ • Zoom in for detailed pixel editing or preview entire page • 16 colors, 14 graphic tools, 32 brush shapes and 32 painting patterns • Invert, rotate, mirror or move images • Cut, copy and paste into other GEOS applications • Integrate text with graphics • NEW! Stretch and scale images • Overlay effects • Stop pattern fills in progress • New graphic shapes including connected lines, ellipses and squares • Grid function for easy sketching.



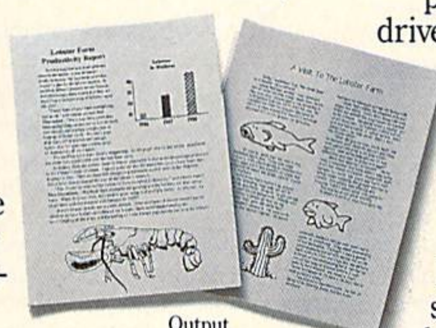
Desk Accessories



geoPaint



deskTop



Output

7. deskTop: Efficient file and disk manager • View files as icons or text • Sort files by size, type, date or name • Open, close, rearrange, copy or delete files • Manage non-GEOS files • Access and execute BASIC programs • NEW! Support for 2 drives and a RAM Expansion Unit (including the 1541, 1571, 1581 and RAM drives) • Multiple file selection • Color code notepad and files • Date and time display • Recover most recently deleted file • Faster file copying • Simplified printer and input driver selection.

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Berkeley Softworks

The brightest minds are working with Berkeley.

Reviewed by Gary V. Fields

Shakespeare The Page Integrator

Computer: Amiga
Publisher: Infinity Software, Inc.
1144 65th Street, Studio C
Emeryville, CA 94608
Price: $225.00

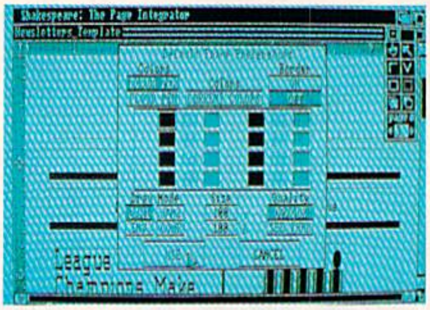
Shakespeare V1.1 is the second release of Infinity Software's full-color desktop publishing program. The publisher uses a true WYSIWYG approach, including color. The tools and options include all the traditional publishing features needed for serious desktop publishing.

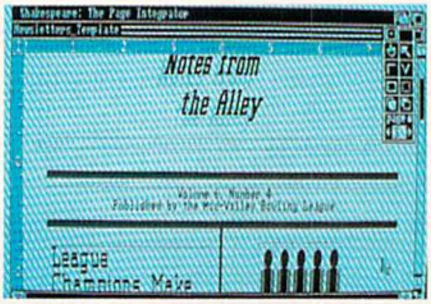
But what really sets *Shakespeare* apart is the unique way it handles color. Rather than restrict printouts to only 32 or 64 colors (as most paint programs do), each individual frame here can handle an entirely different color pallet. Because of this, the user can import images with different resolutions and color schemes and print them without having to sacrifice a single color or brush stroke. *Shakespeare* is the only publishing program I know of which can handle graphics of any resolution (including mixing several in a single layout), and can use all of the Amiga's 4096 colors on a single page. The program's toolbox is filled with a healthy array of options and features required for serious publishing.

Rather than supply different magnification scales to show its WYSIWYG display window, the program allows you to open another window to display the page you are editing in miniature. This method means you can edit a magnified view while viewing the effect of those changes in the small image.

Improvements in version 1.1 over the original program include fixes of most of the serious bugs, faster operations, screen guides to help you properly align images, support of V1.3 printer drivers, a correction to the print page size menu (default now is 8 × 10 inches), and the program takes full advantage of expansion RAM.

One of the major complaints about V1.0 was that there was no accurate way to align images on a page. That problem has been eliminated elegantly in V1.1. Now when you pick up a frame, eight perpendicular alignment guides appear which make it easy to arrange columns, graphics, headlines or any frame. Using the guides you can align objects as you would if you were using the actual arms of a T-square. And to add to the control, if you hold the SHIFT key down while moving or sizing a frame, an arrow pointing up and down or left or right will appear over the control tool restricting the movement or sizing of the frame to a single direction. The addition of these tools makes aligning and sizing images a snap and eliminates the source of most layout mistakes.





Shakespeare is the only publishing program I know of which can handle graphics of any resolution.

The same ease of operation and control is continued in sizing and moving graphics. The move and size tools, along with the left button are used to move and size frames, but the same tools and right button let you size the images. This logical approach lets the user toggle between operations (you can use the SHIFT key to filter directions here too) instantly. Thus you can crop the image and change its size quickly and instinctively. Anyone who has ever spent the time and effort required to get a piece of art work sized and cropped correctly by a commercial print shop will fall in love with *Shakespeare*'s simple solution.

Like other publishing programs, *Shakespeare* restricts text and graphics to defined boxes. Text can be defined with mixed fonts, styles, sizes and even colors (*Shakespeare* shows color changes on-screen and does not make you wait for your printout like other publishers). One of the more appealing features of the program is that it allows you to load several graphics and fonts at one loading session and then pick and choose from them later as you edit. This friendly scheme makes it easier to keep track of fonts and images stored on different disks. And just as important, you can select fonts from another disk rather than having to move all the ones you will be using to a single system or font disk.

Although you can import text files created by any word processor and use them on your pages, *Shakespeare* includes a flexible text editor which lets you input and edit text directly into frames using cut, copy and paste commands. The text you input will format automatically to match whatever parameters you select for that frame, including color, font, size, style, margins, etc. And as you would expect, because *Shakespeare* is designed with an emphasis on color, you can use both Amiga fonts as well as any which are ColorFonts compatible.

One feature serious desktop publishers will appreciate is the way the program loads clip art. Instead of the normal "load/use" sequence, you can load several pieces of art into memory at once. Then to activate a particular piece of art you simply select it from a menu and presto it's ready—no delays or grinding disks to break your chain of thought. The program supports PostScript, Hewlett-Packard and all Preferences printers, but where it really pulls away from the pack is in how well it can drive a 24-pin matrix printer. If you are sure you will never move beyond a dot matrix printer, yet still need to incorporate digitized images in your documents, you should give this publisher serious consideration. Of all the publishing programs I've used, this one is the best at handling dot matrix printer output.

As you would expect, there are things about *Shakespeare* which I do not like: (1) Unlike *Professional Page, PageSetter* or *City Desk,* this publisher supports only one editing screen size (the resolution can be varied). Thus you can never see and edit all the objects on a entire page at one time (you cannot edit images shown in the

Continued from page 105

NO QUARTER

Just Endless Arcade Action

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ARCADIA

Double Dragon is a joint publication of Arcadia and Tradewest.

Arcadia is a member of the Mastertronic Group.

ARCADIA 711 West 17th St., Unit G9, Costa Mesa, CA 92627.
Tel. (714) 631-1001.

Reviewed by Jeffery Scott Hall

excellence!

Computer: Amiga
Publisher: Micro-Systems Software
12798 W. Forest Hills Blvd.
Suite #202
West Palm Beach, FL 33414
Price: $299.00

It's been over three years since Micro-Systems Software introduced their first Amiga word processor *Scribble*. Now, they're back again with another exciting debut—*excellence!* However, in between times there has been a rat race to see who can produce the most sophisticated word processor for the Amiga. Does *excellence!* break new ground, or is it just another word processor? Let's find out about this "new kid" on the block.

A Neat Package

The package is impressive inside and out. The 300-page manual is encased in a sturdy three-ring binder and comes with a plastic case. You are probably picturing a manual that covers your entire computer desk with stacks upon stacks of instructions. If so, then you have a good idea of what to expect (just kidding—it's not that bad at all). In fact, I was able to scan the entire manual within a matter of hours, and I was writing my first document before that. The first two chapters should give you a fairly good understanding of how *excellence!* works. Besides the manual there are two disks, one contains Workbench and the other contains the *excellence!* word processor.

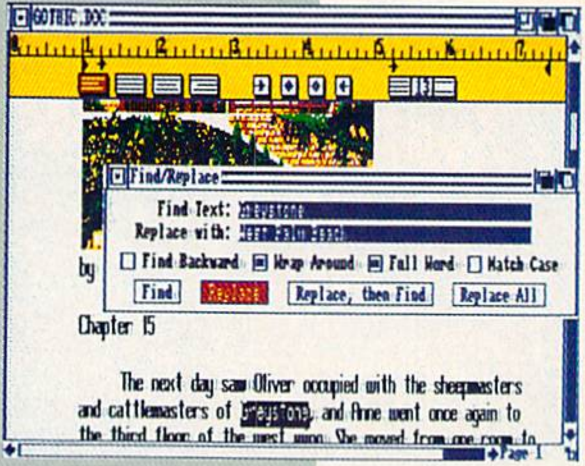
The disks are not copy protected, allowing you to easily make backups. Next you must decide upon how you wish to access the program. You have three choices of operation: one drive, two drives or hard drive. The manual gives a complete explanation of how to operate from any of the setups.

If this is the first time you are using the program, you will be greeted by a scrolling message with updates and errata. It takes about five minutes to display, but once you have read the message, you can disable it from appearing again.

A Glimpse of *excellence!*

It would be impossible to list every function of *excellence!*, so suffice it to say the program has all the standard word processing features. We'll concentrate on the less-than-usual features you'll find. For example, there are up to eight different colors for display and print, automatic table of contents and index generation, the ability to import IFF graphics within your document, standard ASCII file support, multiple columns (up to four), multiple footnotes and headers, multiple fonts, math calculations, a 70,000-word thesaurus with antonyms and synonyms, a 90,000-word dictionary, mail merge, macro keys, WYSIWYG (What-You-See-Is-What-You-Get) editing, and much more. Now, let's take a more in-depth look at the operating environment.

For a close-to-perfect document, use the 90,000-word spelling checker, thesaurus and grammar checker.



First Comes the Writing

Once you have started or finished writing a document, you may adjust the appearance and output. This is done through the use of a page setup requester that allows you to choose one to four columns, left and right margins, page numbering, page size, pitch, headers, footers and various other items affecting your text. The Preferences option allows you to adjust the default colors, specify if the screen is to flash when an error occurs, select either interlaced or non-interlaced screens, select whether or not you want a backup and icon for all files saved, and a requester asking which macro keys and spelling dictionary it should use. This option is automatically set to default with its own names, however you may change them if you wish to use a dictionary or glossary other than the one provided.

The *excellence!* file requestor is very quick when handling operations. At the bottom of the requester there are three gadgets: Open (document), Drive (change drives) and Cancel. One of the requestor's best features is the ability to let you select a new subdirectory or drive to search before waiting for the entire contents of the current directory to be displayed. In the default mode the requester displays only document files. However, you may click on the upper-right portion of the requester to have it list all disk files or just picture files. If you find the file you want before the directory completes the listing, double click on it to load it.

With enough memory, you can open multiple document windows. This allows you to cut and paste between any documents that are currently opened. You will find a ruler at the top of the screen which shows margins, justification, tabs, line spacing and indents. You can copy or hide the ruler to other parts of the document. To move around your document you use drag bars, arrow keys and the mouse. When you type on the screen, the mouse pointer will disappear allowing for full view of your document; it will reappear with mouse movement. To cut, paste, copy and delete you highlight the text and select the appropriate menu item. If you make a mistake, select Undo Typing to erase all text back to when the document was first loaded, then select Redo Typing to bring things back to normal. You may also select the Revert to Saved option

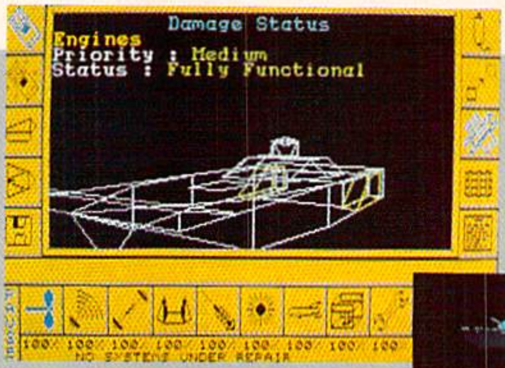
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Reviewed by Jeffery Scott Hall

Carrier Command

Computer: Amiga
Publisher: Rainbird Software
3885 Bohannon Drive
Menlo Park, CA 94025
Price: $44.95





The game takes place in real time, so while all the fighting is going on in one place you can switch to another.

Carrier Command from Rainbird Software is an arcade-strategy game that puts you at the helm of your very own futuristic aircraft carrier.

First you will be asked to choose between three different languages: English, Dutch and French. You should choose the one which is appropriate for you. Next, you will be prompted to look in the instruction manual for the randomly-selected password. Once you have entered the password, a 3D rotating carrier is displayed with a menu above it. On the menu you will find three options: start strategy game, start action game and load a saved game. The only difference between the strategy and action game is the time required to complete them. Once you have made your selection the action begins!

The Objective

Enemy terrorists have taken over a high-tech carrier and are capturing friendly and neutral islands with brute force. These islands are vital to your survival, for a worldwide energy crisis is in effect, and you need to set up centers to mine, recycle and produce materials to form a large network of power plants. Your job is to conquer the enemy islands and install power pods to provide the material needed for the mission. It is not as simple as it sounds, for not only will the enemy islands have extremely powerful defenses, but friendly islands will also be under attack. It will be a constant struggle to see who can control the islands.

Charting A Course

You are in command of a heavily-armed carrier that includes aircraft, amphibious assault vehicles, surface-to-surface missiles, decoy flares, drones and one powerful laser. All action will be shown in the center of the screen, which resembles the ship's observation deck. Along the sides of the screen are command icons that control different functions (too numerous to list) affecting the ship. First, you must decide where to go and the quickest route to take. This is done by scanning the map while looking at the information on each island. Islands indicated on the map in blue are friendly, yellow islands are neutral, and red islands are hostile.

To chart your destination click on the map, and a marker will appear. Now just engage the auto-pilot, and you will be taken to your destination. You may also use the map to find certain resource islands which produce the materials you require. As you travel to your charted destination, you will see the ship make turns, hear noises and see the awesome power of your engines cutting through the ocean water. Once you have reached your charted destination, you should be able to see the island up close. If you wish to move in closer, keep an eye on the depth gage, and chart a new course just above your current position.

Picture an island with defense weapons including surface-to-surface missiles, computer-guided aircraft, radar stations and the main command center all capable of sinking your beautiful carrier (not a pretty picture is it?). Well, that's OK because you're not exactly the Love Boat. All hands prepare for battle!

Battlestations!

At your disposal you will find many offensive and defensive weapons, so you can fight and protect your ship at the same time. On deck you have a laser turret, which is very effective at destroying targets on the island's border, incoming aircraft and missiles. In your ship's missile launcher you have several hammerhead low-flying missiles capable of massive destruction. But your ship's premier offensive weapons are the Amphibious Assault Vehicle and Manta aircraft (described below).

Your ship has two defensive weapons and one powerful tool; these are flares, drones and the automatic repair systems. Flares will divert any incoming missiles from hitting your ship, in case your laser is damaged. The drones are inflatable decoy units designed for sacrificial defense against any low-flying missile attack. You may position the drones in any strategic position you wish through either the drone pattern selections or your own pattern. Only four drones may be placed around your ship at any given time, but you may replace one or all if they are destroyed. Since you will be under attack while fighting for control of the islands, you have a built-in automatic repair system to fix any item on the carrier. If an item gets damaged, select the appropriate item from the requester and move it to a high priority. This will start the repairs and tell you how long it will take. Now, let's check out the Manta aircraft and the Amphibious Assault Vehicles (AAV).

The Manta and AAV

On your ship you will find four each of the Manta aircraft and the Amphibious Assault Vehicles. The Manta aircraft pro-

Continued on page 108



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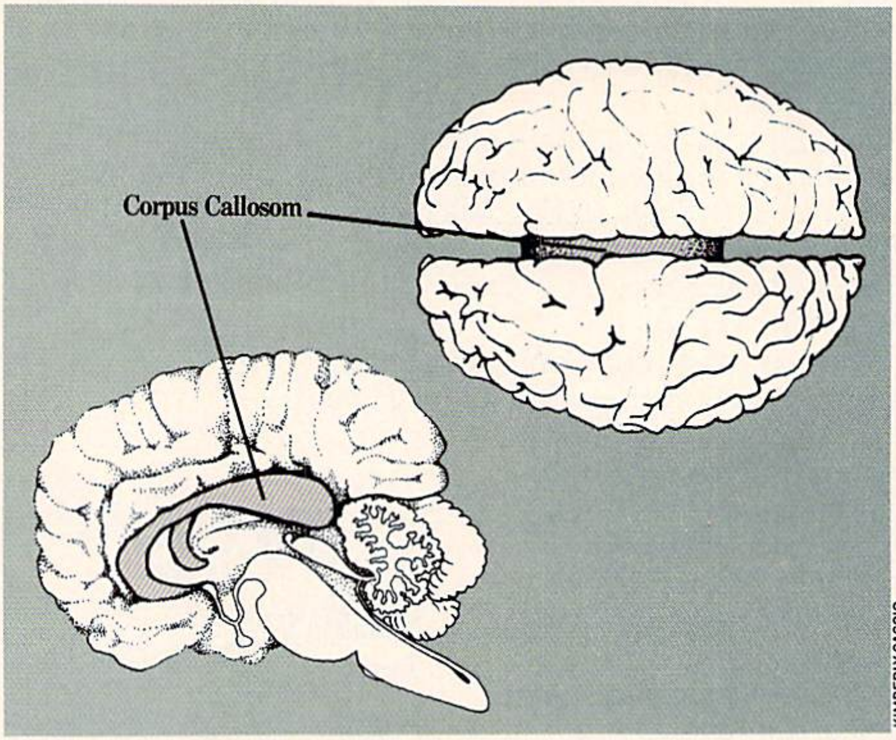
by John Iovine

Synchronicity: Right and Left Brain Lateralization

for the Amiga

There's a new wave coming. People are trading in their Transcendental Meditation mantras and alpha brain wave training machines for the latest in consciousness-expanding techniques—right and left brain synchronization using sound and music.

Brain researchers know that people who use both sides of their brain equally usually have enhanced problem-solving abilities.



Brain Science 101

When you look at a human brain it's easy to see that it is a double organ constructed of two identical-looking hemispheres.

Information gleaned from the past 40 years of brain research shows that each hemisphere of the brain has its own specialized methodology of problem-solving ability and its own way of perceiving the world around it. The right brain is nonverbal, emotional, holistic and spatially oriented. The left brain is verbal, sequential, literal and emotionally flat. (For 30% of left-handers the reverse is true.)

Both sides of our brain are connected by a bundle of nerve fibers called the "corpus callosom." This brain organ is responsible for exchanging information between the right and left hemispheres.

Just to give a little background on this specific area of brain research, much of the information gained from this type of brain research began with operations on people who were having severe epileptic seizures. It appears that the onset of a seizure begins with a localized abnormal electrical activity in the brain that quickly spreads throughout the brain. The doctors decided to cut the corpus callosom, separating the hemispheres, in an effort to keep the seizures localized.

The operation succeeded but left the patient with two distinct split brain personalities. Other information was gleaned from people who had suffered strokes (cerebral hemorrhages) that destroyed one half of the brain while leaving the other intact.

Fortunately, today researchers don't have to experiment with people who have gone through this kind of tragedy. Since each half of the brain is fed by a different artery in the neck, researchers can selectively put one side of the brain to sleep using a tranquilizer injected into one of the arteries. This is called the "Wada procedure."

Lefty or Righty?

When presented with a problem one side of the brain will usually take over and become the dominant problem-solver depending upon the nature of the problem. A mathematical or verbal problem will usually be handled by the left hemisphere. The right hemisphere will take over in visual and spatial problems. All this happens below our level of awareness (subconsciously).

Researchers David Galin and Robert Ornstein first discovered this division of labor in the brain in 1972. They recorded EEG (electroencephalogram) patterns separately from both hemispheres. When different problems were presented to the subject they determined that one hemisphere became the dominant problem-solver. When a verbal task was assigned to the subject, a decrease in the alpha rhythm was noticed on the left side while it remained constant on the right. This clearly indicated that the left brain was working on the problem while the right brain continued to idle. When a visual problem was presented, the opposite results were recorded.

In some instances both halves of the brain will fight for control; this happens when both sides want to answer a particular problem or question. This can result in stammering and stuttering.

Freud

The right brain is strikingly similar to what Sigmund Freud described as the subconscious (unconscious) mind. Many techniques used by psychologists to probe a patient, use the right brain superiority in task-handling. The Rorschach ink blot test, for example, where an ink blot is given to a subject for image association, is clearly a right brain task.

Dreams, another Freud concept for analysis, are strongly located in the right hemisphere.

These approaches work because the right hemisphere has its own memory of events, and they are not necessarily the same memories as the left hemisphere's. Repressed memories and traumatic events from a subject's past can be brought to the surface by using these psychological tools.

Continued on page 52

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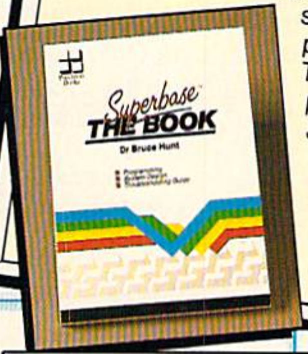
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Continued from page 50

A better term for subconscious or unconscious may be "non-verbal," since the right brain is equally conscious, and we don't want to unjustly insult ourselves, do we?

Brain Waves

Brain Dead 0 cps

Delta 1–4 hz slow waves more common in children and a normal part of their development. Adults produce delta from time to time during sleep.

Theta 4–7 hz appears to be related to problem-solving, sorting and filing of information within the brain's memory. Theta waves are also produced by Zen meditators in deep meditation.

Alpha 8–13 hz dominant rhythm in normal adult EEG when subject is relaxed, awake with eyes closed.

Beta 14+ hz appears in normal adults who are "alert" as opposed to relaxed. Being in "beta" is identified as being tense, irritable and basically unpleasant.

New Wave

In the 1960's and early 1970's Transcendental Meditation and bio-feedback devices designed to produce alpha waves became something of a rage. It promised enlightenment, relaxation and stress reduction. Today there is a growing interest in right and left brain synchronization. A technique discovered by Robert Monroe promises to help put anyone into alpha, theta or delta states (beta state is the norm) by listening to sound that has a synchronized beat to it. The brain wave pattern becomes entrained by the synchronization beat and follows it. The synchronization beat should be at the frequency one is interest in obtaining. For example, you might try 9 hz for alpha, 6 hz for theta, or 4 hz for delta.

Sound

Sound at the brain EEG frequencies is too low to hear. By playing two sounds whose frequencies vary by a small amount, as an example let's use 9 hz (alpha), a beat frequency of 9 hz can be heard. This sounds like a wah-wah-wah or wavering in and out of the sound frequency and volume. What you're hearing is actually the difference between the two frequencies.

A sound example is worth a thousand words. In order to clarify this explanation, please power up your Amiga and go to an AmigaBASIC window. Enter:

```
Rem Sound Test

Rem Voice 0 & 3 are Left Channel
Rem Voice 1 & 2 are Right Channel

Sound Wait

Sound 523,25,70,255,0

Sound Resume
```

Run this program. What you will hear is a "C" note. Now enter this additional line after the first sound statement and before the sound resume statement:

```
Sound 532,25,70,255,1
```

Run the program again. Notice the difference; you should hear the note wavering in and out. That's the beat frequency, the difference of 9 hz between both sounds.

FFR Frequency and Following Response

This is a term constructed by Monroe to describe his technique. Essentially by presenting these sounds separately to each ear, the EEG wave pattern of the brain will follow the beat frequency. So if we used our program example, this should make the brain resonate at 9 hz bringing on an alpha state.

It is necessary to use stereophonic headphones connected to the left and right channels of the Amiga audio-out. The sound must be mixed intra-cranially in order for the effect to be observed.

The connection to the original alpha training bio-feedback is that scientists studying experienced meditators discovered that in deep meditation the right and left sides of the brain fell into synchronization.

I do not have an EEG machine to verify what I have read on this subject. I do plan to build one later this year as an interfacing project for the Commodore computers. This subject will be one of the first things I'll test.

I heard about Monroe's claims years ago, but I didn't act upon them because I'm a bit skeptical of his research. Monroe also delves into psychic phenomena. Recently however, I have noticed advertisements in popular science and psychology magazines for tapes based upon the technique I've presented. In addition, electronics companies are selling interface cards for MS-DOS-compatible computers to accomplish the same thing. Because of this interest I decided to throw caution to the wind and write this article *before* I am able to verify the results.

Combining Frequencies

There is an additional technique available to us. We can set one pair of voices to one beat frequency and the other pair to another beat frequency thereby attempting a combination of effects. While one frequency could maintain alertness another could meditate relaxation.

To do this copy the EEG subroutine in the main program. Rename the copied subroutine EEG2:, change the C variable in the copied routine to G. Add two sound statements to the "start" subroutine similar to the statements already there but using the G variable and channels 1 and 2. Add the feature to the main menu or the 1 set EEG menu, and you're all set.

The Program

The program is for those of you who would like to try enhanced learning, programming, relaxation or whatever.

The program first queries you for what frequency you'd like to try: alpha, theta or delta. Then you will be asked for a time period for how long the program will operate and produce the sound. Once the program is started, you can use your gadget to shrink the window and then open up another window to work on something else.

Interesting research is reportedly being performed using sound synchronized with sleep.

Music

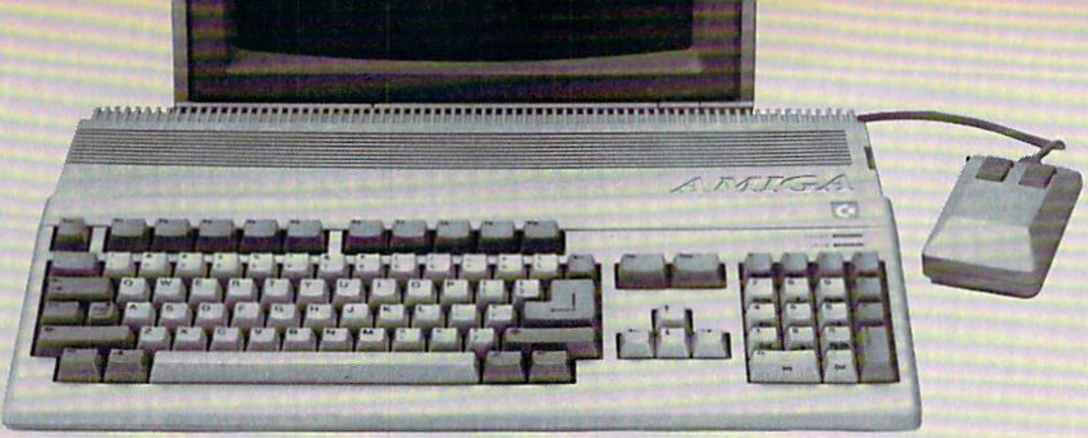
Listening to a monotone note can get boring. There isn't any reason I can think of that would prevent this system from working with music. The basic idea, of course, would be to assign one channel to follow the other with a frequency difference of the brain wave state you'd like to explore.

Conclusion

I hope this information about our dual-nature personality doesn't unnerve too many people. Everyone has separate personalities and abilities residing in the right and left brain.

We have merely scratched the surface of the current happenings in brain research. If you are interested in similar projects such as an EEG machine to test brain lateralization or programs to determine how efficiently you use both hemispheres of your brain,write to me in care of *Commodore Magazine*.

Continued on page 99



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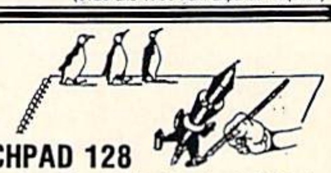
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by Matthew Leeds

Image Processing for the Amiga

What is image processing? The irreverent thought of a Cuisinart™ stuffed full of pictures comes to mind, but we live in a more enlightened time. Image processing is used every day in weather prediction, medical diagnostics, robotics, printing, manufacturing and a long list of other applications. Image processing once required expensive dedicated hardware systems and a lot of patience on the part of the operator. The Amiga has brought affordable image processing to both the professional and interested amateur.

The art and science of analyzing and modifying pictures has come a long way since the days when Sherlock Holmes peered through a dusty magnifying glass at a faded photograph. Image processing algorithms and computers have both advanced to the point where anyone can now experiment and achieve remarkable results with low-cost software.

This article will give you a brief overview of image processing technology, and then we'll take a short guided tour of some of the image processing software available for the Amiga. If after reading this article you find that you would like to learn more about image processing, check the bibliography at the end.

The heart of any image processing system are the algorithms it uses. These can be classified in several ways:

Point Process: Changes to a single pixel's value based only on its value.

Area Process: Changes to a single pixel's value based on the value of both it and its neighbors.

Geometric Process: Changes in the position or arrangement of a group of pixels.

Frame Process: Changes to pixel values based on comparing two or more images.

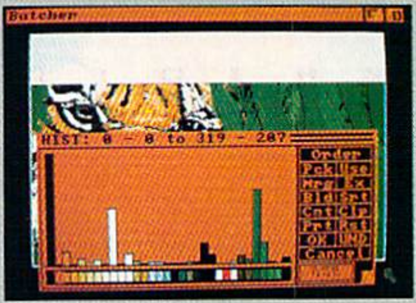
Image Processing is used to improve or modify the appearance of an image, to extract information from an image, to recognize specific elements in an image, and to measure image elements. A classic example is in crop management. A false color satellite image can be analyzed for the type of crops growing in a given area based on the infrared spectrum signature that specific plants emit. A count of the percentage of pixels of a given color in an image, once you know the area covered by the image, can tell you the acreage planted in that crop.



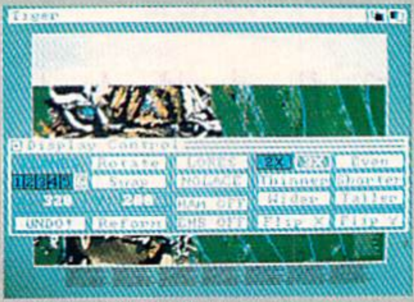
PIXmate – Image Processor menu



Butcher – Color Segments menu



Butcher – Color Histogram



PIXmate – Display Control menu

Let's take a look at each type of algorithm as it would be used in a specific application. A classic point process is contrast equalization. Often an image will have too low a contrast to allow the discrimination of fine detail. An intensity histogram displays the percentage of pixels that fall into each intensity range in the image. By adjusting the change at each intensity step you can stretch or equalize the contrast in the image.

An area process uses neighborhood information to modify pixel values in an image. Area processes are used to filter out noise in an image, sharpen an image, or smooth an image. The standard algorithms used in area processes are correlation or convolution operations. You replace a pixel's value with the sum of its neighbors, each weighted (multiplied) by a factor. The weighting factors are called the "convolution kernal." Typical kernals are 3×3 or 5×5, although larger kernals are used in high-end image processing systems.

The design and size of the kernal used has a direct correlation on the result of the area process. A kernal that looks like this:

```
-1 0 1
-1 0 1
-1 0 1
```

would be used to amplify vertical edges while a kernal like this:

```
-1 -1 -1
 0  0  0
 1  1  1
```

would be used to amplify horizontal edges. Other types of kernals are used to filter out noise, increase sharpness or perform other operations. Selecting the right kernal can make quite a bit of difference in image processing.

Convolution is a linear operation. Nonlinear area processes are also used in image processing. Sobel, Cross and median filters are examples of non-linear area processes. Each has its own advantages and disadvantages, but all are generally slower than linear processes.

Geometric processes are used to correct or induce distortions. Changes such as stretches, rotations or wrapping around a three-dimensional object are good examples of geometric processes. On the Amiga other geometric processes would include conversion between different display resolutions or clipping a portion of an image to save as a brush. The perspective mode in *DeluxePaint II* is a good example of a geometric process.

Frame processes involve more than one image. Merging two images together is one example of a frame process. A typical industrial use of a frame process is in mo-

tion detection. Using two frames captured from a video camera, with some time elapsed between them, a frame subtraction process would reveal any change between the two frames. The resultant difference would comprise the movement that occurred during the time lapse.

On the Amiga, image-processing software is used not only in these kinds of traditional applications, but also to manipulate IFF images for use in paint and animation programs. Changing color palettes, controlling the number of bit planes in an image, converting between different screen display resolutions and creating special effects all make use of image processing.

Image Processing Software

Butcher

The first commercial image processing package for the Amiga was *Butcher* from Eagle Tree Software. The current version of *Butcher* (V2.0) is an excellent example of an image processing package created with the special needs of the Amiga owner in mind. It has an excellent user interface, and many of its functions are intuitive.

Butcher offers a good mix of Amiga-specific and image processing tools. It will convert between all Amiga display modes including HAM, supports all overscan images, and offers a good number of image processing options. It allows you to perform palette manipulation to rearrange color palettes, set color cycling or sort color registers. Its color palette requester can also be used to adjust the contrast of an image.

The image processing tools offer a wide range of options. The Effects menu includes inverting and complementing the color requesters, false and pseudo color changes, antique and B&W toner effects, color separation as either Cyan, Magenta, Yellow, Black (CMYK) or Red, Green, Blue (RGB).

The Process menu Edge option uses the Sobel operator. You can set the threshold level at which it decides an edge exists and how it will treat that edge. You can either create a map of the edges or enhance them on the original image. Three types of edge detection are available in terms of detecting changes in the image. The Filter option removes isolated pixels or groups of pixels from an image. This can be used to clean up noise in an image or to reduce the number of color registers used by an image. The Mosaic option creates new images mapped to tile shapes you can create. Other Process options include Density Slicing to isolate or remove intensity ranges and Color Segmenting that performs similar operations on hue, saturation and value. There are also options that create half-tones in a variety of ways.

Butcher will also create histograms of your images. Within the histogram requester you can sort the color palette and make changes. You can also print out a report of the results of the histogram. *Butcher* is an excellent program for the average Amiga user who wants to experiment with some image processing effects and also manipulate IFF images.

PIXmate

PIXmate (from Progressive Peripherals & Software) may be viewed as the competitor to *Butcher*. It can also be seen as a complementary program to *Butcher*. Although they offer some of the same features, there are more differences than similarities. *PIXmate* handles all Amiga IFF formats including support for Extra Half-Brite (EHB) and overscan. It will also read the original style of Digi-View files, Atari Neochrome files, and a raw image data format. *PIXmate* has one of the best file requesters I've ever seen. *PIXmate* will also grab screen images from other programs, provided you have suffi-

cient RAM to run both applications. It will hunt through memory to find *DeluxePaint*'s screen and copy it into its own memory. It will also grab any other screen displayed by a program running concurrently.

It can be used to convert one IFF format to another; sort, modify, extract and pack color palettes; perform color separations; create pseudo color operations; modify the image based on hue, saturation and color; or remap the color palette of an image to either that of another image or to another color palette stored on disk.

You can flip the image on either the X or Y axis, make it thinner or shorter, taller or wider, rotate or swap bit planes while retaining the color mapping information, and change the size of the image in exact pixel increments.

The histogram capability of *PIXmate* is quite nice. You can adjust the contrast just by raising or lowering a slider for each color palette. It will generate a color usage count as well.

PIXmate offers a greater number of options in image processing operations. However, the Image Processor requester is confusing and requires a fair amount of study (with many references to the manual) before a degree of understanding is reached. It offers area and frame processing. Frame processes include most of the boolean logic operations. The area processes use convolution, in either a 3×3 or 5×5 matrix. Averaging, randomization, median filtering, unsharp masking and local contrast enhancement options are all available.

Slider controls set the threshold level for image processing operations, and there are a variety of pre-programmed kernals available. These kernals are designed to selectively filter for different types of detail.

PIXmate can be difficult to use at times, but it offers a great deal of power to those who take time to learn how to operate it.

DeluxePhotoLab

Electronic Arts' *DeluxePhotoLab* is not strictly an image processing package. Although it does not have traditional image processing capability, it does offer the Amiga user some excellent image manipulation functions. *DeluxePhotoLab* contains three modules: Paint, Poster and Colors. Only the Colors module is of interest in image processing terms.

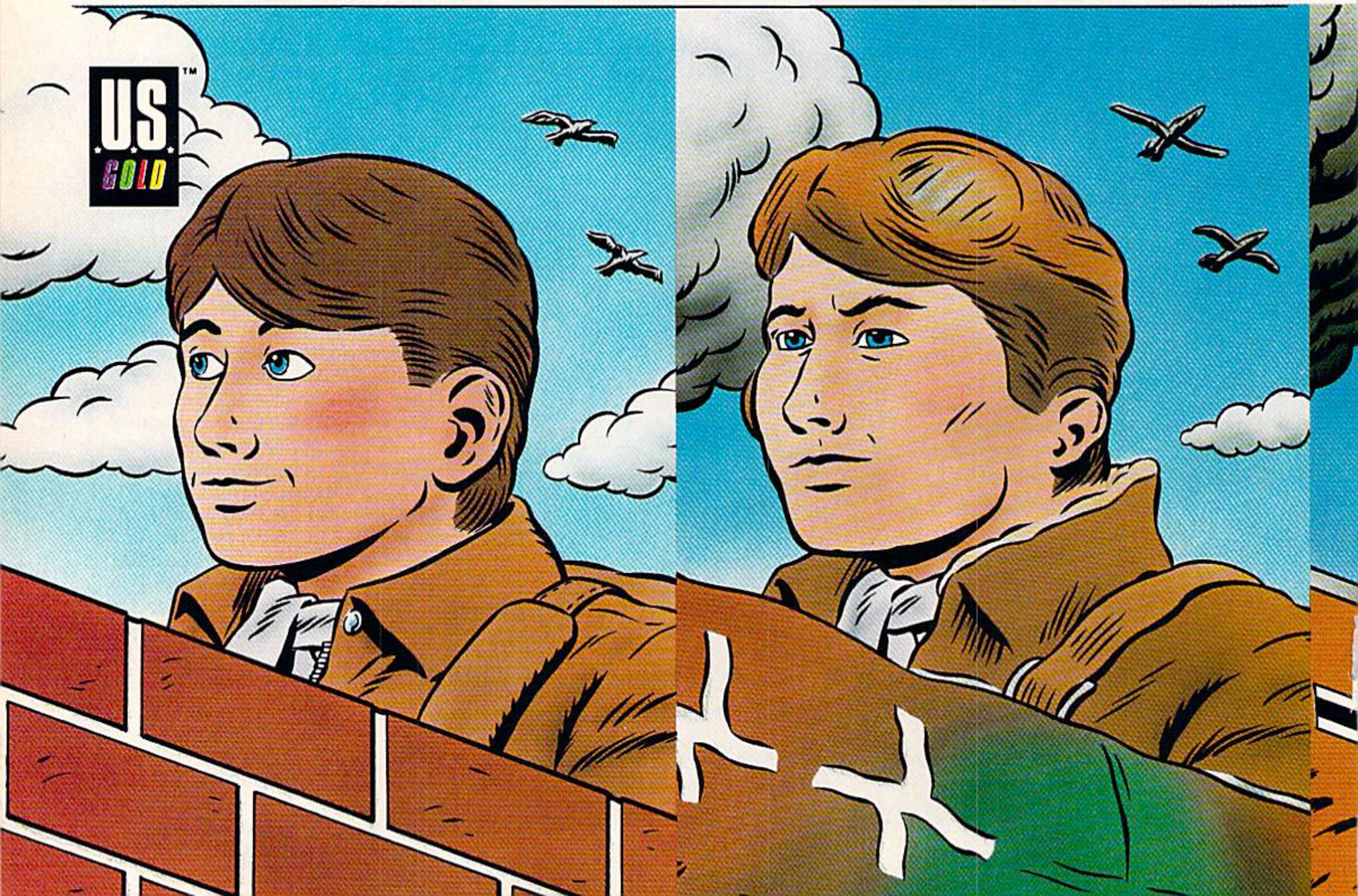
The Colors module offers a histogram display of the color registers. The display can be of any item: Red, Green, Blue, Hue, Saturation, Value or Population. The display can be sorted in ascending or descending values. You can adjust the values in the histogram as you please using up and down arrows.

You can also generate color separations in RGB or CMYK, negative images, convert color to gray scale and create "pixelized" images. The screen size, number of bit planes and number of colors used by an image can be adjusted. Colors supports all Amiga display modes, including HAM, EHB and overscan. Although you probably would not buy *DeluxePhotoLab* specifically for its image processing capabilities, you should be aware of what it can do for you.

Photosynthesis

Photosynthesis is a powerful dedicated image processing program. It was not designed for any other purpose and has no Amiga-specific image manipulation capabilities. In fact you may want to own one of the above packages just to convert images into the low-res format that this program uses. However, if you want to really get into hard-core image processing, there is no other option. *Photosynthesis* is the powerhouse of traditional image processing on the Amiga.

The program can store up to five images



in its buffers. All operation results are stored in a new buffer, leaving the original image untouched. *Photosynthesis* is the only commercial program that lets you create your own kernal. It offers all of the boolean operators, a full set of filters (average, median, etc), histograms, plus a script option for automated image processing. This is not a program for the squeamish or the easily daunted. The user interface is not friendly, nor is the manual. I would suggest that *Photosynthesis* is for those who think of themselves as hackers.

FPIC

If you want to start off inexpensively in image processing, I recommend a public domain program called FPIC. This is an excellent introduction into image processing. It is a remarkable package with a dozen operators available from a menu, and it includes the ability to create its own kernal. It also has a histogram function, and an excellent split-screen capability for comparing the original and resulting images. It is available on Fish disk #71.

Analytic Art

Finally, I want to mention a program called *Analytic Art*. This package was originally created to explore Mandelbrot sets. It does have several other modules, two of which are of interest to image processing aficionados. The Sphere module will map any non-HAM IFF image to the surface of a sphere. The user can control the size and shape of the sphere, but not the lighting direction. This is a very fast operation.

The second module of interest is the 3D module. This is what hooked me. Remember how you first felt when you saw the perspective mode in *DeluxePaint II*? Imagine that in spades. The 3D module lets you tilt an imaginary plane, size it, rotate it, set your point of view, set the screen centering and redraw your IFF image just as you've positioned the plane. It also will convert a flat image into a contour image by elevating each pixel to a specific height based on its color. You can adjust the height each color will be set at. This thing is great for special effects. Imagine taking a false color satellite image and turning it into a contour map automatically. I can think of lots of other applications as well.

This is only an entry-level look at image processing. If you want to learn more about it, I suggest the following books:

Digital Image Processing by G. Baxes, Prentice Hall 1983.

Digital Picture Processing by A. Rosenfeld and A. C. Kak, Academic Press 1982.

Computer Image Processing and Recognition by Ernest Hall, Academic Press 1979.

Butcher ($37.00)
Eagle Tree Software
P.O. Box 164
Hopewell, VA 23860
(804) 452-0623

PIXmate ($49.95)
Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
(303) 825-4144

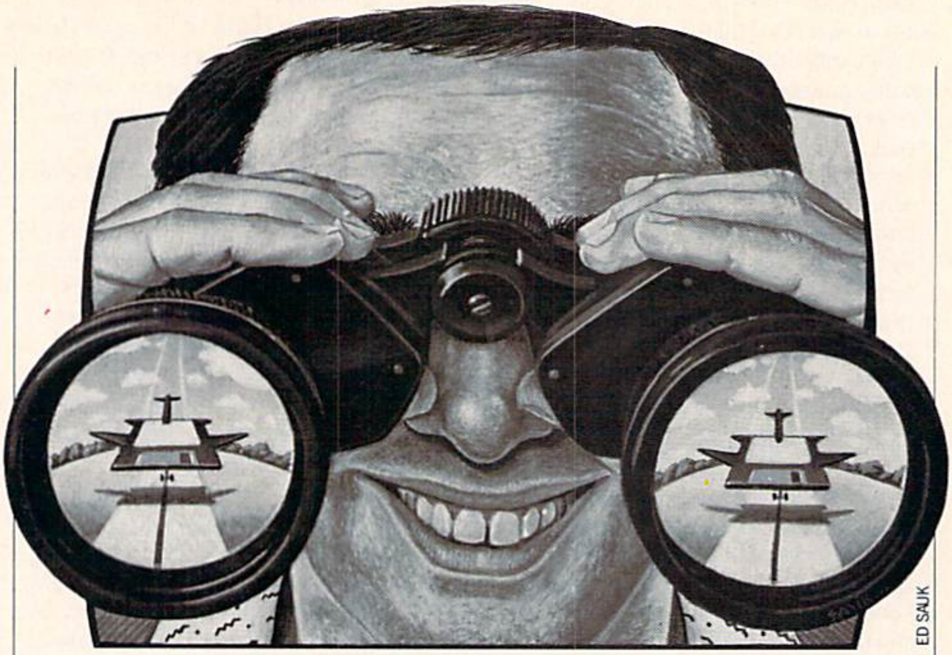
DeluxePhotoLab ($199.95)
Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171

Photosynthesis ($149.95)
Escape Sequence, Inc.
P.O. Box 1101
Troy, NY 12180

Analytic Art ($59.95)
Crystal Rose Software
109 S. Los Robles
Pasadena, CA 91101
(818) 795-6664

by Graham Kinsey

Amiga Public Domain



This month I've reviewed some of the programs on Fish disks 147 through 154. There are also a bunch of programs from PeopleLink and local BBS's to discuss. This month's hot PD program is a *fantastic* animation called Walker that requires 2MB just to run! Also appearing this month is a convenient program that beefs up the Workbench menu strip, as well as a program that creates 16-color animated mouse pointers.

For each program the author is given when known, along with the Fish series number. AmigaZone download file numbers are listed for programs obtained from PeopleLink. (If no file number appears it may still be on PeopleLink, but I obtained it somewhere else.) When a public domain program has been classified as shareware, this is also mentioned with the suggested amount.

Due to the large size of animation files being released for the Amiga, I have decided to assume that the normal size of an Amiga animation is *one megabyte*. Unless I specify otherwise, *all* animations reviewed here require one megabyte to run. 512K Amiga owners should keep this in mind.

Escape from Jovi: by Oliver Wagner (Fish #148; Shareware: $8)

A simple *Lunar Lander*-type arcade game in which you must pilot the ship towards the top of the screen instead of the bottom. Written in assembly language, Escape from Jovi has multiple levels and decent sound effects.

HandyIcons: by Alan Rubright (Fish 148)

If you would like to add some more choices to the skimpy Workbench menu strip, HandyIcons is a program to look at. HandyIcons adds an additional menu (which can be filled up with programs of your choice), to the Workbench menu strip. You can use HandyIcons to add menu options that will load a program. Therefore, instead of having to open disk and drawer icons to run a program, you can now simply access the menu strip instead. HandyIcons allows you to create entries only for Workbench tools—not for projects (i.e., you can create an entry for a word processor, but not for a document).

The maximum number of entries allowed in the HandyIcons menu depends on screen resolution and the current font selected. The preferred method to add menu entries for programs is via the icon-extended selection method, however, you can also use the Info option on the Workbench menu to permanently set up a HandyIcons menu. A separate program called HandyWB allows you to set up a HandyIcons menu from the CLI or the startup-sequence.

ExecLib: by Jean-Michel Forgeas (Fish 150)

ExecLib is for C (especially *Lattice C*) programmers who need some help building their disk-based libraries (like the ones supplied on the Workbench disk and the famous arp.library). Complete instructions are provided, including most of the necessary assembly and include files. (You need to pull the others from the ROM Kernal manual, but if you are really doing serious programming you already have those manuals anyway.)

Iconizer: by Alex Livshits (Fish 150)

Another program that saves mouse pointers, so you can easily switch between them. Unlike others that save pointers simply as files, Iconizer saves a mouse pointer as an icon. In addition to the image, the icon's selection point and speed are also saved in the icon file.

Pilot: by Terry LaGrone (Fish 150)

This is an Amiga implementation of the language Pilot, which is similar in some ways to the beginner's language LOGO. Although Pilot can certainly be used for introducing the world of computer programming to children, the author is mainly concerned with using Pilot in the area of interactive video. One application that LaGrone's company is currently working on is for the National Park Service (and in particular, parks in Alaska).

NOTE: Every time I tried to run the PILOT demo program my Amiga crashed, so be aware of this fact when attempting to check out this program.

GlobeDemo: by Bob Corwin (Fish 151)

A small (both in size and memory required) graphics demo of a rotating planet Earth. The speed and colors used in the demo can be adjusted with a small pop-up menu.

Pcopy: by Dirk Reisig (Fish 151)

A simple diskcopy program with some interesting features. Pcopy supports verifying the destination disk. However, Pcopy does not make an exact copy of a disk; the date/time stamps are not the same on the destination disk.

The only unique thing about Pcopy is that it has a special copy mode where a copy is started as soon as you insert the destination disk (i.e., if you are making multiple copies, you don't have to click on a gadget each time you start the copy process). Pcopy has some user-definable safeguards when you put it into this autostart mode, so you don't accidentally copy over

a non-blank disk.

SCT: by "aklevin" (Fish 151)

This is SetColorTable, a CLI-based program for altering/saving color palettes. SCT isn't a program beginners would want to use, since there is no gadget-laden user interface, and all colors must be specified in hexadecimal. You can specify which screen to modify/save colors from by inputing the screen's title name. (Unfortunately, the accompanying utility program Cruise which was written by the author to fetch any screen's title name isn't in the SCT directory on Fish 151. You can use Steve Tibbett's ScreenX program to find out the title name of a screen instead.) Some examples are given in the documentation for which SCT can be useful, including setting up a batch file that acts as a crude screen-blanker.

Slideshow: by Mike McKittrick and Sheldon Templeton
(Fish 151; Shareware: $16)

This slideshow program can be run from Workbench or CLI, is mouse driven, and the mouse can be used to move the slideshow forward or reverse. Fifteen different wipes are available for use within the slideshow program that provides some pretty transitions.

This has the potential to be a very good program except for one major problem: the program will display *only* 320 × 200 IFF pictures. The authors mention that those who pay the shareware fee will receive a version that displays 640 × 200 IFF pictures, however, that version won't display lo-res IFF pictures. If the authors ever figure out how to support multiple-resolution modes, they could have a hit on their hands. Until then, Slideshow doesn't have what it takes to make waves in the Amiga PD arena.

HPman: by Steve Robb
(Fish 153; Shareware: $10)

HPman is a convenient utility for controlling an HP LaserJet Plus laser printer hooked up to your Amiga. In addition to changing fonts, HPman also gives you control over such settings as lines per inch, margins, number of copies, end of line format, paper source and orientation.

AssemblyDemos: by Foster Hall
(Fish 154)

If you program in assembly language, or are just curious about what can be done in assembly, here are a set of tiny demo programs written in assembly. Included are three stereo sound demos that demonstrate phasing and other sound effects. There are a couple of nice graphic demos, as well as a program that checks for viruses. The source code for only one assembly program is provided, but the author is willing to release the other source code examples to anyone who contacts him.

Guardian: by Leonardo Fei (Fish 154)

This virus-checking program's only unique attribute is that if you have an Amiga 1000, you can choose to have Guardian permanently installed inside the code on your current Kickstart (in place of the Debug( ) function). This mean that Guardian in effect becomes part of the Amiga operating system.

Pointer Animator: by Tim Kemp
(AmigaZone file #13174;
Shareware: amount not specified)

Would you like to spice up your Amiga some? How about adding some constant colorful animation to one basic component of the Amiga environment? Pointer Animator allows you to transform your dull four-color Workbench pointer into a 16-color animated pointer!

Plenty of sample animated pointers are provided for you to try out. Included in the sample set is an exploding volcano, a "No Smoking" pointer (complete with a lit cigarette), a rotating color-cycling rectangle, an electrified mouse pointer, a swimming fish, and a happy face (with a big surprise thrown in!). As if this were not enough, you can also create your own animated pointers using any standard paint program. Animated pointers don't chew up much memory or many processor cycles, so they add a nice touch to your Amiga graphics powerhouse.

Pelihacks: by Oren Peli
(AmigaZone file #12910)

These are three graphics display hacks. Benchquake is a hack that Californians will just love! Jumpbench reminds you of what can happen when you fool around with your TV set controls, and running Trails is sort of like finger painting with the mouse pointer.

Exploration: by Dr. Gandalf
(AmigaZone file #12725 and 12726)
A small but very nice ray-traced animation with the sound of a rocket ship taking off from an "Amigatized" planet and deploying a communications satellite. The ray-traced graphics were created with Impulse's *Turbo Silver*, and the sounds in the

animation were digitized with *Perfect-Sound.*

Walker: by Brian Williams & Imaginetics

It's been a long time since I have seen an animation demo as incredible as Juggler and DemoReel1 seemed when they first appeared. Walker is an animation that truly deserves to be mentioned among the best Amiga animations of all time. Walker is incredible! It's an animation of an AT-AT Imperial Walker (from the movie *The Empire Strikes Back)* walking in front of an Amiga 2000.

Walker is unique on many fronts. It is the first Amiga animation ever created that *requires 2MB* just to run! So far just about every animation I've ever seen would run with a minimum of 1MB (although certain animations like RGB and Walk needed 1.5MB if you wanted to run them from Workbench or hear the digitized sounds).

Walker may also hold the record for the longest full-screen Amiga animation, since it runs for over 20 seconds (if that doesn't sound like much, take a look at the average *VideoScape 3-D* animation and you'll see that full-size animations rarely last more than three seconds). The smoothness of the animation is also worth noting.

Walker also has some nice sound effects (although not as spectacular as the animation sequences), including some decent music during the loading sequence. Since Walker takes up 1.6MB of disk space (and a long time to load), it is nice to have some pre-animation music to listen to instead of the gronking of disk drives.

Although Walker was on PeopleLink for a brief time, it is now gone since not many people want to spend four hours to download one animation no matter how good it is. If you're on PeopleLink you should be able to find an AmigaZone member who can send you a copy if you can't obtain it locally.

RZSZ: by Frank Anthes-Harper
(AmigaZone file #13408)

This is a port of a pair of Unix programs that can externally add Xmodem, Ymodem and Zmodem protocols to an Amiga terminal program that doesn't support these protocols on its own. RZSZ supports the batch transfer capabilities that are a part of Ymodem and Zmodem, however, the program does not support resuming aborted transfers, which is a powerful portion of the Zmodem protocol. Unfortunately, RZSZ can only give a terminal program these added protocols if the terminal program supports an option to surrender control of the serial port to an external program.

There is at least one Amiga PD program that can take advantage of RZSZ. Access! by Keith Young (version 1.4 was reviewed in last month's installment of this column) doesn't support Ymodem and Zmo-dem protocols by itself, but now with Ymodem and Zmodem available to you. RZSZ you can now use Access! and have

Zoetrope: by Louis Markoya
(AmigaZone file #13422 and 13425)

An animation created with the new animation package *Zoetrope* by Antic Software. Zoetrope is written by Jim Kent, author of *Aegis Animator.* The animation Louis created is of a set of multi-colored 3D letters (which spell *Zoetrope,* naturally) exploding into the screen. The effect is quite pleasing and serves notice that *Zoetrope* is an animation package worth looking at.

Atredes_DEMO: by Michael Cox
(AmigaZone file #12338)

This is a terminal program whose sole purpose is to be used with BBS's that are running the new *Atredes BBS* software by Incognito Software. This terminal demo program allows you to view SkyPix graphics,a custom graphics system used exclusively with *Atredes.* SkyPix includes the ability to send IFF brushes over the modem.

Blackjack: by Daniel J. Condon
(Shareware: $15)

A good blackjack game which uses the mouse for all input. This rendition supports multiple decks as well as all the essential rules, including split pairs, insurance and doubling down. This program was primarily written for blackjack enthusiasts to practice card counting. Unfortunately, it does not teach the basic methods for those who haven't learned a card-counting system.

Cleanup: by David Czaya
(AmigaZone file #13595)

This program will clean up after any program that uses the arp.library, an important piece of ARP (AmigaDOS Replacement Project), but Cleanup doesn't clean up after itself. Although this program is intended for programmers who are using arp.library, you could also use this to prevent a poorly-written program that uses arp.library from corrupting your Amiga environment.

It's time to tell you all how you can nominate Amiga PD programs to for the best of the year. First of all, I am *not* taking a poll here! What I'm looking for is not only which programs you feel are the best PD programs in '88, but also *why.* So don't just send a *list* of your favorite PD programs without telling me why you feel these programs deserve special recognition.

Also don't select old programs (programs that appeared before 1988) unless said program received a *major* upgrade in the past year.

If you are recommending a program that you read about in my column, please make a note of which month that PD program was reviewed. If the program was never reviewed in my column (this shouldn't occur too often), please note that instead. Don't worry about categorizing the programs (the categories that appeared in the "Best of PD" '87 feature are bound to be revised), however if you want to categorize programs that's fine. Please send all recommendations to:
Best of Amiga PD '88
1015 S. Quincy Ave. #112
Quincy, MA 02169

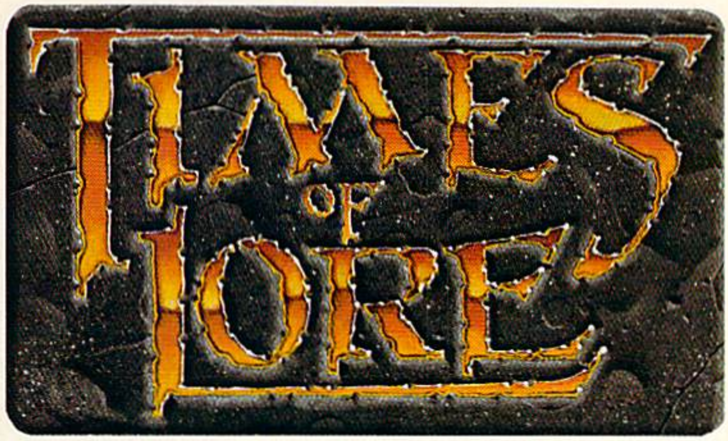
If you are online on PeopleLink, then just stay tuned, as I will be asking for suggestions from the folks who frequent the AmigaZone in late January or February. The deadline for sending in your suggestions is February 30, 1989, so don't delay!

Expect more of the same next month, including possibly an early word on the winners of the First BADGE Killer Demo Contest (remember that last year the "Zeroth" BADGE Killer Demo Contest was held).

As always, I can be reached on the Amiga Zone on PeopleLink (ID: G KINSEY), or on the IDCMP BBS (617) 769-3172 (300/1200/2400 baud, running 24 hours a day), addressed to SYSOP. If you have written a public domain/shareware/freely distributable program, or have obtained one that you think is worth mentioning to all Amiga owners, then please attempt to contact me via the above or through *Commodore Magazine.* See you next month.

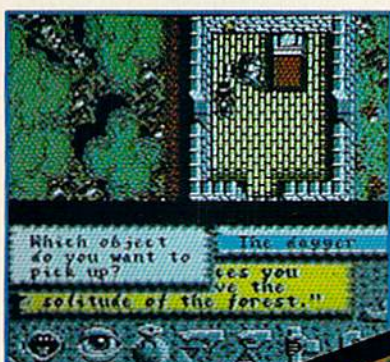
***Fish disks:** For a catalog, send a SASE and four loose stamps or $1 to: Fred Fish, 1346 W. 10th Place, Tempe, AZ 85281.*

To sign up to PeopleLink and their AmigaZone, call them at: (800) 524-0100 (voice) or (800) 826-8855 (via modem).



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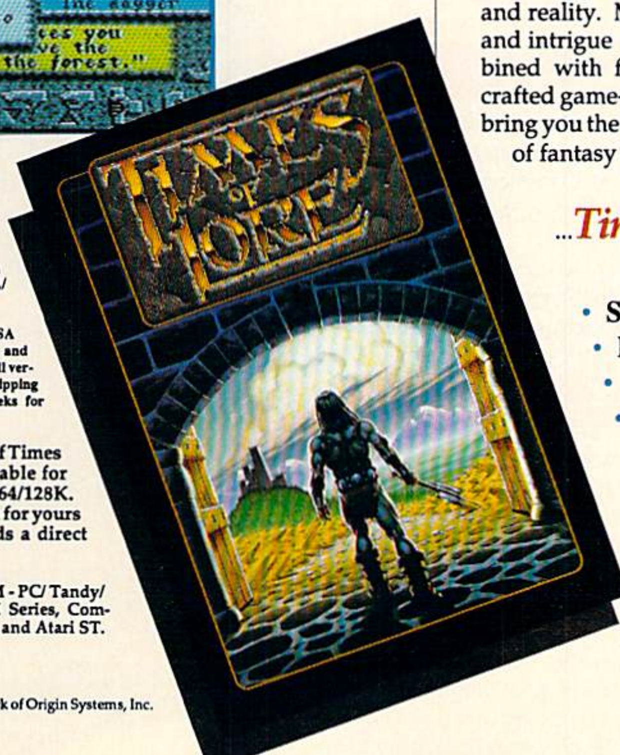
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Grand Prize

In September, 1989, the *Red Storm Rising Admiral of the Fleet* and a companion will travel on a 7-day expense-paid travel award to Great Britain. They will visit Dunoon, Scotland, home of the US submarine base at Holy Loch from which *Red Storm Rising* players operate. Then it's on to London, where they will marvel at the huge, international 1989 Personal Computer Show. The *Admiral of the Fleet* will also win a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy, author of the best-selling novel, *Red Storm Rising*.

Prizes for Runners-Up Too!

The First and Second Runner-up *Vice Admirals* will receive a Commodore 128-D Computer System, a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy.

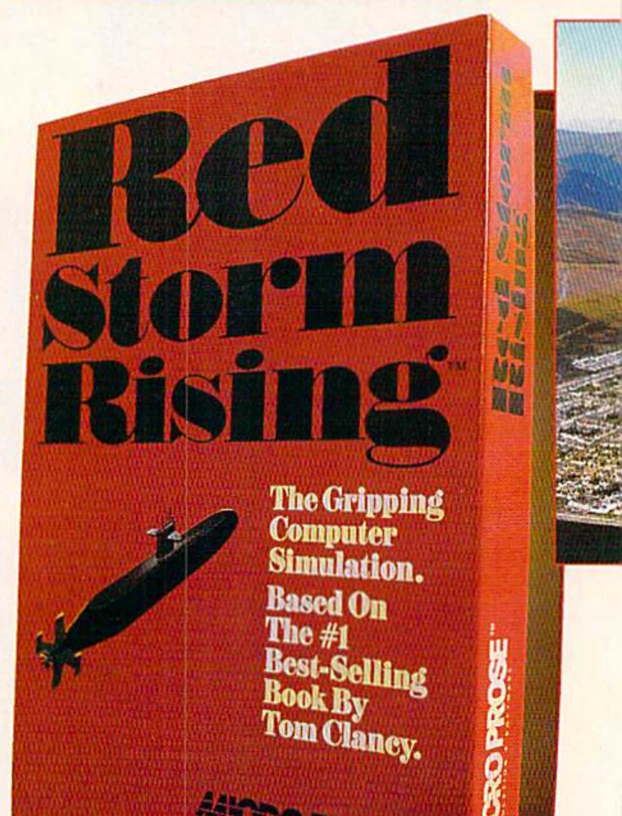
Another seven *Vice Admirals* will receive a complete library of current MicroProse Software titles for the Commodore 64, a one-year subscription to *Commodore Magazine*, and *Red Storm Rising* materials autographed by Tom Clancy.

Strategy

First, send for your *Official Log Form* and complete *Rules* (see "To Enter" on next page). Then, start playing the full *Red Storm Rising* campaign game and learn to achieve maximum Efficiency Rating (ER). (For your initial entry and first round of competition, your best campaign will be the campaign with your highest ER.) Learn how to protect the ER of your campaign in progress by choosing the "Computer Log" option at the "Contact Screen" preceding each battle, and then saving your game. (The "Contact Screen" is shown at right.) If your performance does not meet your standards in the ensuing contact, you can re-play it (before going on to another battle) without losing your previous score. On the *Official Log Form* you will fill in the details of each of your most successful battles in your best campaign. Before you fill out the form, you might make photocopies so that you can keep trying for higher and higher ERs.



Contact Screen



Commodore
MAGAZINE

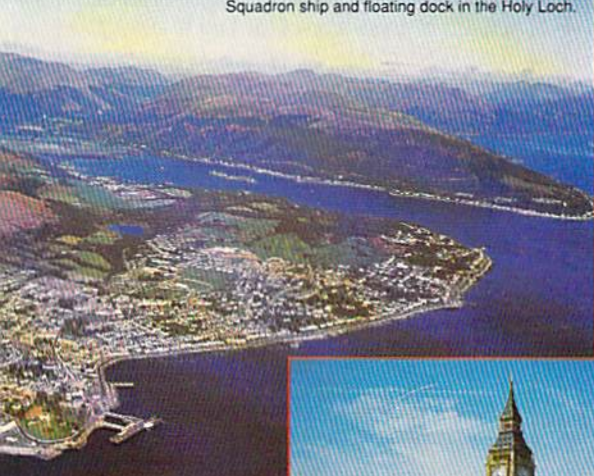
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Dunoon, Scotland with a 14th US Navy Submarine Squadron ship and floating dock in the Holy Loch.







To Enter

1. Obtain an *Official Log Form* and the complete *Rules* by sending a letter or postcard as soon as possible to the *Red Storm Rising* Board of Naval Examiners, 180 Lakefront Drive, Hunt Valley MD 21030. (Several pre-addressed postcards have been inserted into this edition of *Commodore Magazine.*)

2. Submit your **final** game save disk (**one disk only**) *and* a completed *Official Log Form* from your highest-ER *Red Storm Rising* Campaign to: *Red Storm Rising* Board of Naval Examiners, 180 Lakefront Drive, Hunt Valley MD 21030. Your entry must be **received** not later than March 31, 1989.

Naval Operations: Orders

The Board of Naval Examiners will make every effort to ensure that the *Red Storm Rising Ultimate Challenge* is a fair competition and a meaningful test to all who enter. As you proceed into the higher levels of competition, the Board of Naval Examiners will advise you of specific examination procedures.

The Timetable

March 31, 1989	Deadline for Board of Naval Examiners to **receive** Official Log Form and final game save disk from Entrants seeking promotion to Admiral.
April 3, 1989	During this week, the Board of Naval Examiners will select 15 Rear Admirals from among All Entries received.
April 10, 1989	During this week, Appointments will be set for 15 Rear Admirals to be interviewed via telephone, by the Board of Naval Examiners.
April 17, 1989	During this week, the Board of Naval Examiners will interview the 15 Rear Admirals, and grant promotions to 10.
April 30, 1988 (Red Sunday)	Ten (10) Vice Admirals will compete in the Red Alert War Game for the right to be called Admiral of the Fleet.
May 1, 1989	Verification Process Begins; Vice Admirals return records from the Red Alert War Game.
Late Sept., 1989	Admiral of the Fleet and a companion depart on their 7-day travel award to Scotland and England.

Keep your calendar open for all steps in the Timetable.

Watch the News Section of *Commodore Magazine* for More Information on the Red Storm Rising Ultimate Challenge.

ROUNDBALL SOFTWARE EA Style

by John Jermaine

Hey, sports fans! Have I got a story for you. I've always had a thing for microcomputer basketball, so I had to interview Eric Hammond (developer/designer of *Dr. J and Larry Bird Go One-on-One*). *One-on-One,* introduced in 1983, is currently available for most microcomputer systems. More than 400,000 units have been sold worldwide, and the program has the distinction of being the most successful sports-oriented computer game of all time.

Electronic Arts has recently released *Jordan vs. Bird: One-on-One*. This takes *One-on-One* basketball in new directions. I'll also be talking with Mark Madland who designed that program. And we'll get Michael Jordan's thoughts on the program. So get comfortable and prepare for the half-court adventure of a lifetime.



Jordan vs. Bird live

Before we start, here's a brief look at the history of basketball. Ancient Aztec Indians played "Ollamalitzli," a popular sport where two teams tried to hurl a rubber ball through a fixed stone ring located above the players at one end of the stadium. No one really knows the rules of the game, but the losing captain was often decapitated. I guess there was some justice in those days.

Dr. James Naismith is the father of modern basketball. He invented the sport at the Springfield, MA Training School of the International YMCA late in 1891. The first official match took place on March 11, 1892, and the International Amateur Basketball Federation was organized in 1932.

During the 1940's, coaches came up with a new tactic: "freezing the ball." A team could maintain a leading score and let the time on the clock run out by dribbling the ball, passing it around and deliberately not shooting at the basket. This strategy quickly became a part of the sport, but it slowed down the pace of the game, and scores were at record lows. In fact, the Fort Wayne Pistons beat the Minneapolis Lakers 19-18 on November 22, 1950. Around this time public interest in the sport also reached an all-time low. Danny Biasone, a team owner, came up with a plan to rectify the situation. He devised the "24-second rule," which required a team in possession of the ball to shoot at the basket within 24 seconds. If they didn't get a shot off before time ran out, the other team gained possession of the ball. Biasone's idea eventually made the game more exciting, and scores increased significantly (as did attendance).

In recent years, the names of basketball players have become household words, while their incredible deeds are the legends of our time. Julius "Dr. J" Erving was named the most valuable player of the NBA in 1981 and led the Philadelphia '76ers to an NBA Championship in 1983.

Larry Bird of the Boston Celtics has a long list of personal achievements. These include: NBA Rookie of the Year (1980), named to All-NBA First Team (1980-88), NBA All-Star Game Most Valuable Player (1982), NBA Most Valuable Player (1984-86), NBA all-time three-point field goal leader, NBA All-Star Three-Point Contest Winner (1987, 1988), and so on.

Then we come to the Chicago Bulls' Michael "Air" Jordan. Like Bird, he has a long list of accomplishments including: NBA Rookie of the Year (1985), led NBA in scoring (1987), regular season scoring leader (1988), Defensive Player of the Year (1988), NBA Most Valuable Player (1988), NBA All-Star Game Slam-Dunk Champ (1987, 1988).

Jordan on Jordan vs. Bird

Michael Jordan talks about taking over Dr. J's *One-on-One* legacy, how he would play against himself in *Jordan vs. Bird,* and life after basketball.



Jordan explains some fine points during the design session.

Jermaine: Larry Bird stated that you are a very good replacement for Julius Erving in this new computer basketball game. What does it mean to you to succeed Dr. J?
Jordan: Almost from the day I was drafted to play NBA basketball in June 1984, there has been a growing expectation that I would be the heir apparent to Julius Erving. Dr. J is a legend in basketball. For me to be compared to Dr. J is quite flattering. Certainly, the creativity and flair which he exhibited in his play has influenced the players of my generation. However, every player has his own personal style, both on and off the court, and I feel that our styles are somewhat different. My goal is to be the best Michael Jordan, not the next Dr. J, but it is an honor to be compared to someone of his accomplishments and character.
Jermaine: Have you ever seen computer video games before the *Jordan vs. Bird* project? Now that you are somewhat familiar with computer video games, what do you think of them?
Jordan: I've seen the computer game between myself and Larry and think it is an exciting and fun contest for kids and adults of all ages. Prior to this game my real experience with computer games were games like *PacMan* and arcade video games. Now that I've discovered computer video (especially *my* computer video game), I'm very interested in playing more and more computer video games.
Jermaine: How does it feel to be considered a software artist? Was it interesting to actually see how the game was developed, as you helped with many of the features that are now in the game?
Jordan: It was fascinating for me to sit with the programmers and see the game developed. At certain points, I described to programmers how certain moves are made and right before my eyes the moves were programmed and inserted into the computer video. It was one of the most interesting and dramatic sessions I have ever been involved with.
Jermaine: What was it like to see yourself dunking and scoring on the computer screen? Is this a fair portrayal of what you do on the basketball court?
Jordan: It was really fun to see myself dunking on a computer screen—especially the double 360 which the programmers added to my game. Beyond simply having fun, I had a chance to analyze the form and style which the computerized Michael Jordan displayed in his dunks. I met with the programmers for several hours and

Continued on page 113

Beginnings of a Best Seller

Getting back to the subject at hand, Eric Hammond has always been a basketball fanatic. In 1983, he created the original *One-on-One* program—an amazing accomplishment at that time. Hammond is also a record-holder of sorts: *One-on-One* is the best-selling Electronic Arts title of all time. I recently spoke with Hammond who told me about his work with Erving, Bird and the best-selling EA product to date.

John Jermaine: What inspired you to a write a basketball program? Did you consider using any other possible titles for the game?
Eric Hammond: I've been playing basketball since I was a kid. It just seemed a natural project to combine my skills. Now, if I could only play as well as I program (but I'm not sure I want that either). Anyway, *One-on-One* was the program title from the beginning, and I don't think anybody really thought about using a different name. I guess Activision and Gamestar also liked the title (if you know what I mean).
Jermaine: Were Julius Erving and Larry Bird your first choices for the *One-on-One* project?
Hammond: Yeah, especially Dr. J. I can remember playing B-ball in grade school, dreaming I was Doc. It was funny that we didn't think about too many other players at the time. EA was really hot for Larry. They thought he was the next Jerry West. Bird was just coming into fame when *One-on-One* was being developed, so I really didn't know much about him back then. Now I do. To tell you the truth, I was surprised to find out that both of them had signed. What an inspiration that was.
Jermaine: If Erving and Bird had declined, did you have other basketball stars in mind for the project? If so, who were they?
Hammond: Kareem [Abdul-Jabbar] and "Magic" Johnson were mentioned, but Electronic Arts (being the marketing wizards that they are) were set on the names that would draw the most attention. Looking back on the situation, I think it would have been a toss-up between Magic (my present basketball hero), "Air" Jordan, Isaiah Thomas, and a few others.
Jermaine: How did you get the licenses to use Erving's and Bird's names in *One-on-One?*
Hammond: EA's lawyers acquired the names for the project. I understand it was a pretty uneventful procedure. Electronic Arts called up their agents, and a little while later they called back and said the deals had been made. I can't tell you how pumped up I was when the good news arrived.
Jermaine: Can you give me some information about the program in general?
Hammond: The original version of the game was developed on an Apple II. *One-on-One* was officially started around June of '83 and finished on December 5th of the same year. *One-on-One* consists of approximately 18K of code, where about 1K was used for the computer opponent. This 1K, however, is connected to a number of outside routines which help to make its decisions.

I also ported the program over to the Commodore 64. This meant I had to learn the secrets of the system, but it was fairly easy work. In fact, I completed the job in about a month and a half. Some people seemed to think that the 64 translation of game suffered from severe "Apple-itis," that is, it looked very much like the Apple version and didn't take advantage of the 64's graphic capabilities. In many respects, that statement is true. Once I got the program up and running, I had two directions I could go: do it quick and dirty or go all out and give it a major face lift. I

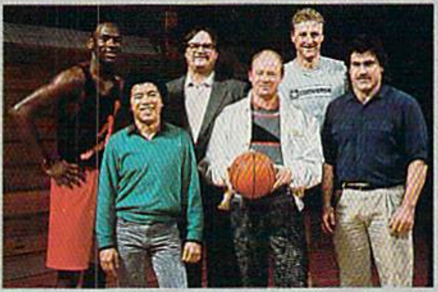
Slam-Dunk Sequel

For the last few years, *One-on-One* has reigned supreme as the most popular computer sports game on the market. But a lot has happened since 1983. Graphics on the 64 have progressively improved. Digitized sounds appear in some programs, while game play gets better all the time. Fans have continually demanded a sequel to *One-on-One*, but for some mysterious reason, it never materialized. That is until now. Electronic Arts has released a package that contains three games in one: an "Air" Jordan slam-dunk contest, a three-point shootout and the classic one-on-one matchup.

This is where Mark Madland enters the picture. Madland, an independent software developer, began working for Electronic Arts during the first quarter of 1987. He was hired to design a new hockey program for the company but ended up developing *Jordan vs. Bird* at the same time. I'll let Mark tell you how this project came together, and what it was like to work with Michael Jordan and Larry Bird.

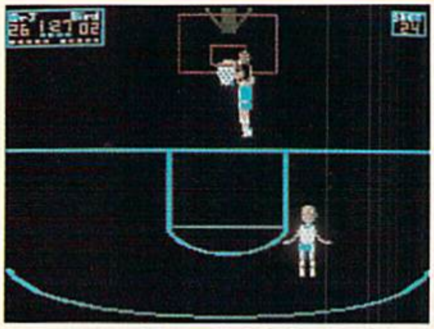
Jermaine: Tell me about yourself.
Madland: I'm 32 years old, single and interested in getting several projects done by Christmas. All kidding aside, my interests include: bird hunting, snow skiing, water skiing and outdoor stuff (like backpacking, for example).

When I was 13 I had an accident with a caterpillar tractor that changed my life forever. Suddenly I couldn't play junior high basketball any longer (when I had been on the starting team). The muscles of my legs wouldn't allow me to cut one way or another, and I was always falling down on the court. One day the wrestling coach came over to me and said, "I've noticed you spend a lot of time on the floor. Why not come and wrestle for me?" So I took his advice and got into wrestling. As my leg muscles strengthened, I began playing high school baseball and football. I eventually became an All-American line-backer at the University of Puget Sound, but I never returned to basketball until I became an adult.
Jermaine: What inspired you to work with microcomputers in the first place?
Madland: Bob Ogden, one of the guys I



The Electronic Artists:
(back row, left to right) Jordan, Hellesen, Bird; (front row, left to right) Chin, Hitchens, Madland.

played football with, pointed me in the right direction. After graduating from college, Bob went to work at the Bally coin-op division, while I became a manufacturer's rep in the toy/game industry. Bob and I remained close friends during those days. We were always talking about the video game market and where it was going in the near future. By 1983 I'd heard enough. I wanted to start a new career in the microcomputer software industry because it seemed to be the coming thing. One problem still had to be solved: did I want to concentrate my effort on the Atari 800 or the Commodore 64? Thank goodness I went with the 64.



Julius Erving & Larry Bird Go One-On-One

chose the first option because programmers are generally pretty lazy. Looking back on the project, however, I wish I'd done a lot more with the 64 translation of the product. I spent all my time working on the animation and literally forgot about the rest of the screen.
Jermaine: When did you actually work with Erving and Bird? Tell me about those sessions.
Hammond: Julius flew out to EA in June of 1983. I was living in San Diego and managed to find the time to fly up and meet with him. There were about ten people in this conference room from Electronic Arts (besides myself and Doc). The top guys at EA (Trip Hawkins, Bing Gordon, Joe Ybarra, etc.) were all present because they're all hard-core sports fans.

The meeting was really helpful in product design, but it was just too much to have this guy in the same room with us. There are few sports figures in the world that equate to Dr. J. It wasn't that here is this sports mogul, and I should bow down to his greatness. It wasn't that at all. Erving carries this air about him. He really cares about things. He cared whether *One-on-One* was good or bad. He also cared enough to give us his time and suggestions.

The spinning of the players, for example, was on the drawing board as a "maybe" when Doc first saw the prototype of the game. He explained how spinning would make *One-on-One* more realistic, so guess what feature I added next. His involvement in the project inspired me to put some extra material in the program.

In August of '83 we all flew out to Massachusetts to meet with Larry and Julius while they were at a Spalding convention. EA put me up in this plush hotel in Boston for a couple of nights just to have a little fun. What a company! On the following Monday, we all went up to Springfield. That was where they shot those great packaging pictures. The photographer was Norman Seeff. He's shot a number of rock groups over the years (including Van Halen). The location wasn't a set. It was actually a grade school, with a lot of graffiti all over it.

Here's the story: We got there around 11:00 a.m. There were just a few guys from Electronic Arts and myself. No Erving or Bird. The police had a large portion of the playground roped off, so the kids knew something was going on. I was bored, so I started shooting hoops while Norman set up his equipment—a lot of equipment. There were about 50 black kids trying to figure out who the heck this white guy was and what was the big deal. Suddenly an average-looking Ford rental car pulls up, and Dr. J and Larry Bird get out. I glanced over and saw a hundred huge eyes. Then everyone took off running like wild horses. Five minutes later there were 300 kids on the playground holding pens and pieces of paper. Those two guys really made the kids' day.

We talked to Julius and Larry later that afternoon and showed them how the game looked (the development was fairly far along at that time). During this meeting, Bird came up with the idea of using fatigue bars in the program. He was pretty low-key, but I respected his attitude towards wanting to keep to himself. He's a great basketball player, and we really had a good time talking with him.

Continued on page 110

I gradually developed editors and tools for the system, found some programmers (who had written their own utilities) I could work with, and we co-founded 3-2-1 Software. Our first project was *HES Games,* a multi-event Olympic-style program. Shortly after that, we created *Break Street* (an authentic breakdance simulation) for Creative Software. Our company disbanded a short time later, so I went on to do some contractual work for Epyx, Gamestar and finally Electronic Arts. I've also contributed to other sports-related software projects: *GFL Football, Championship Baseball,* and *GBA Basketball Two-on-Two.*

Jermaine: How did you get the *Jordan vs. Bird* project off the ground?

Madland: Believe it or not, I've been touching base with Electronic Arts since 1983. I contacted them every now and then, but they never seemed to have a project I wanted to do. Late in January of 1987, we discussed the possibility of generating a hockey game. I really liked the notion, but it was April before we could officially start the project.

In the meantime I came up with the idea of doing another *One-on-One* program, where the figures on the screen would be larger than before, and the user could participate in a slam-dunk contest. I really believed in this project, so I quickly put together an animated sequence of Bird performing a slam dunk (since Jordan hadn't even been mentioned yet). The demo went over pretty well at Electronic Arts.

Ironically, Don Traeger (producer of *Jordan vs. Bird One-on-One*) shared my enthusiasm. After watching the NBA Slam-Dunk Contest on television, he thought it would be fun to do something similar on a computer. Don and I sold the idea to the brass, but it meant the group would have to produce twin programs during the same time frame. After that last detail finally sank in, I began to question my own sanity.

Jermaine: What do you think of the original *One-on-One* program?

Madland: The Erving/Bird game was a spectacular product in its day, but that technology was state-of-the-art four years ago. As you probably know, Dr. J has retired from basketball since then. Our goal was to take the basic *One-on-One* concept and point it in a totally new direction. I think we did just that while adding the extraordinary aerial capabilities of Jordan in the slam-dunk contest and a three-point shootout with Bird.

> "Our goal was to take the basic *One-on-One* concept and point it in a totally new direction. I think we did just that."
>
> —Madland

Jermaine: If Jordan and Bird hadn't participated in the project, who were your third and fourth choices?

Madland: I hate to use the phrase "third and fourth choices." If Larry and Michael hadn't been available, I'm sure we would have contacted two other basketball stars (probably Dominique Wilkens and Magic Johnson). We never actually considered them for the job, but their names came up in our conversations a lot.

Jermaine: Can you tell me about the program's slam-dunk contest?

Madland: We patterned our game after a videotape of the 1986 NBA Slam-Dunk Contest. The contest challenges one to four players to perform several different slam dunks correctly, from a list of ten possible dunks. You can also play against the computer. There are three rounds in the game (preliminary, semi-final and final competition). But you don't always participate in all three of them. In a four-player game, for example, you play three rounds, while three users play two rounds, and so on. If you have two players or fewer, you both go straight to the finals. You're allowed to perform two dunks in the preliminary round, and three dunks in the semi-final and final rounds. If you miss a dunk in one of these three rounds, you get to do it over again. Whenever you perform a perfect "50" dunk, Michael Jordan's face appears on the screen, and he congratulates you for a job well done.

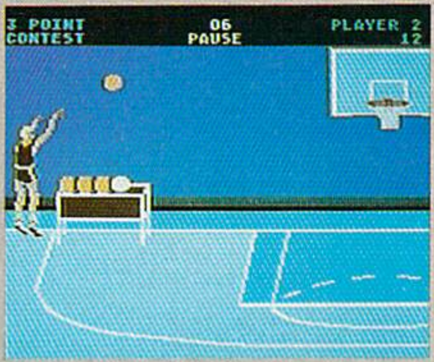
Jermaine: Did you originally plan to put the three-point contest in the program?

Madland: No, we came up with the idea halfway through the project. This game actually emulates the NBA Three-Point Contest you see on television. Five racks of balls have been placed around the three-point perimeter. Each rack contains four balls, worth one point a piece and a money ball worth two points. After shooting your final ball in a rack, Bird runs to the next one, and you can start shooting again. Players have one minute to com-

Continued on page 111



Jordan vs. Bird: One-On-One



Jordan vs. Bird: 3 Point Contest



Jordan vs. Bird: Slam Dunk Contest


YOU

Perfect Impressions

by Gary V. Fields

The Amiga desktop publishing revolution is upon us, and a number of programs have been released, reviewed, revised and re-released. Here's an up-to-the-minute survey of what you can do with what's available and how much it costs.

A powerful publishing era began in 1985. I don't recall the exact day, but I do remember the conversation Zak Allen, an editor for the *Asheville Times*, and I had as we bent over the Associated Press wire machine and read the news story describing the first Amiga 1000. The AP writer described the computer with accurate yet vague terms like "reasonably priced," and "super powered" and finished with ten-cent adjectives like "nifty" and "friendly."

Reading between those indeterminate descriptions, Zak recognized the powerful publishing potential the system possessed. To appreciate how exciting this realization was, you must understand that almost every editor, Zak included, who grew up in a small town, dreams of someday returning and publishing his or her own newspaper. Finishing the AP story, Zak looked up from his chair and said, "You know, with the right software, I think I could put out an entire newspaper single-handedly with one of these."

Over three years have passed since that AP story buzzed the wires, and at long last good desktop publishing (DTP) packages and unique peripherals have arrived which can drive the Amiga's printing presses.

Why is Desktop Publishing Important?

Before there was desktop publishing, converting ideas into press-ready documents was costly and time consuming. Columns of type were set on expensive typesetting machines and then pasted on layout pages with the aid of equally expensive hired help. To include graphics you had to hire an artist. Just to get a story from the writer's fingertips to typeset text required time-consuming transformation as it was typed, then sent to a typesetter who re-keyed each page and had the text formatted and printed as galley proofs. These proofs were then returned to the editor who checked them for errors, penciled in changes and sent them back to the typesetter to be corrected. This cycle continued until everyone was happy with the content, grammar, spelling, font choice and size of each article. Only then was the text ready to be physically pasted on to a layout page.

This expensive and time-consuming cycle continued until every word, line, box and graphic was ready to be turned over to the printer. For years computers have helped publishing companies cut financial corners and eliminate redundant chores, but the cost of those systems ($50,000 and up) was far beyond the reach of individuals and most small businesses. All that changed with the introduction of computers like the Amiga and the high-density dot pattern printers now coming to the market.

DAVID CHRISTIANA

With an Amiga, the right software and a good printer, you can design, store and publish pages (or entire books) mixed with graphics, text, multi-fonts, digitized photographs, boxes, shadows, screened patterns, color and almost any other ingredient required to produce a professional-quality publication. You can do it all quickly in your home/office, and you can do it single handedly if you wish. But best of all this flexibility and power gives you total control at an affordable price tag.

Once a desktop publishing system is up and running properly, it is the embodiment of typographic power. Text can be imported from any word processor or keyed directly into the document where it flows almost magically into multiple columns you define and size. And if that isn't exciting enough, the text will effortlessly flow over, under or around graphics—a trick which has frustrated editors and engravers for centuries. With a DTP system you are free to select or change the type faces and size on a whim and instantly see how those changes will affect each page's appearance. When you are finished, the pages displayed on your monitor should look as if they have been designed and prepared by a professional art/layout staff. And when those pages are dumped to a laser printer, it should be difficult to distinguish them from documents set on expensive typesetting machinery. And best of all, as the pages flow out of your system, the big bucks you charge your clients (or save yourself) should begin flowing in.

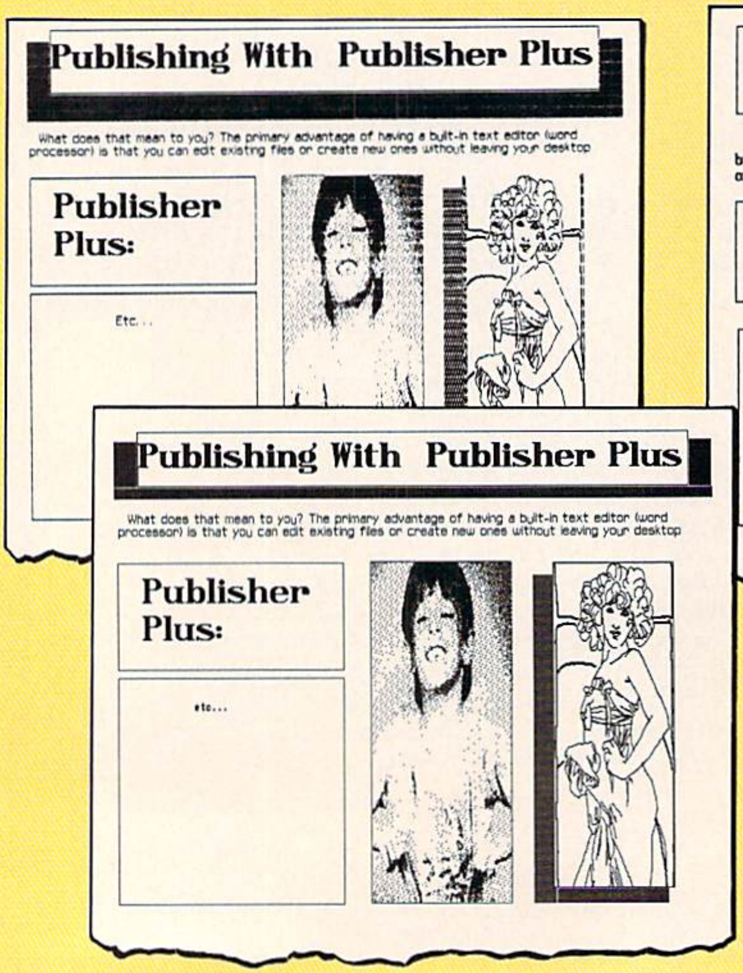
But the appeal of desktop publishing goes beyond the ability to publish documents, books, pamphlets, newspapers or magazines. Its major appeal is the total control it gives you over how your documents are developed, displayed and printed. A good publishing setup lets you bypass many (if not all) of the middle men normally associated with turning seed ideas into publications. Anyone who has ever fumbled trying to paste a hairline border straight between stories or tried to mentally visualize the effect of changing a 42-point headline to 30-point type will fall in love with how easily those problems are solved with an Amiga desktop publishing program.

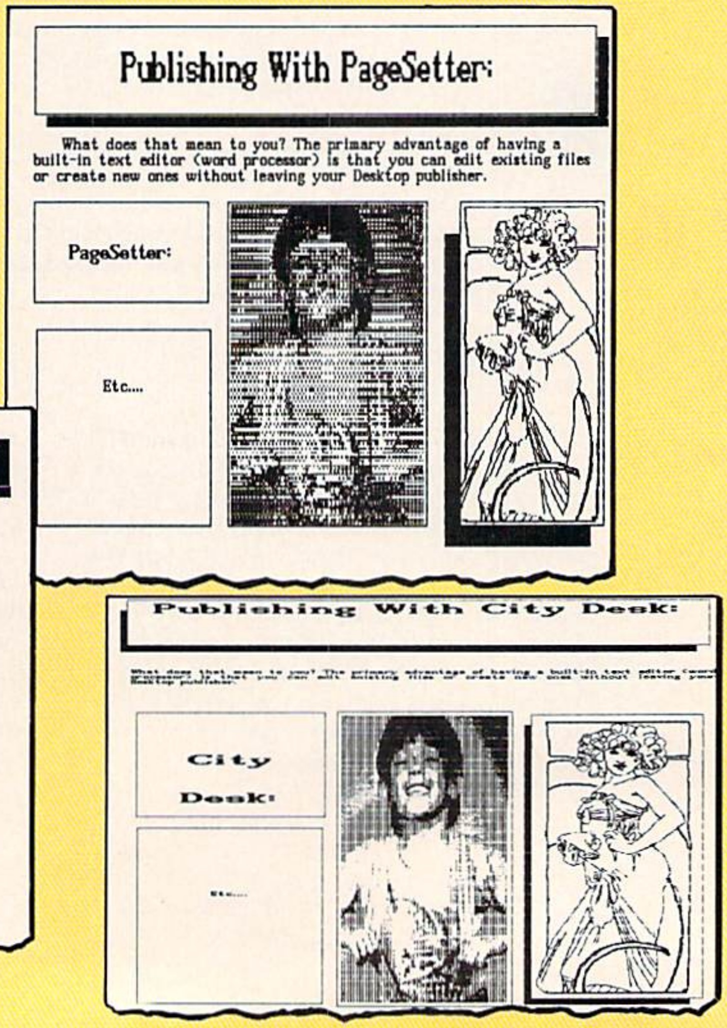
Anyone who hates clutter will appreciate the cleanliness (no waxed strips of text to cut and paste) and order (no more piles of paper to search through looking for that lost graphic or type) which desktop publishing naturally generates. Once you've made the move from paper to electronic publishing, you should never return home with scrap paper sticking to the bottom of your shoes, X-acto® cuts on your fingers or correction fluid on your tie. And beyond those artistic and aesthetic considerations, desktop publishing lets you publish at a comparatively bargain price (we'll talk about cost later).

> You can do it all quickly in your home/office, and you can do it single handedly if you wish.

Which Publishing Software To Choose?

Your first concern should be choosing the right desktop publisher for your situation. Before you buy, assess your needs, skills (or lack of them), existing hardware and how much you can afford to invest. You should even consider whether you really need all the power and options of true desktop publishing. Don't invest a lot of time and money in a DTP system if all you really need is a good word processor.





You are a good candidate for desktop publishing if you: run a business which hires outside help to set or print in-house publications; operate a public relations bureau; are responsible for printing newsletters, posters, manuals or leaflets for a school, church or company; are an artist or graphic designer; are inspired to publish your own book; are already involved in a publishing business; or would like to begin your own publishing company.

The desktop publishing program you buy must let you lay out, format and edit entire manuscripts which include both graphics and text (using fonts with mixed styles and sizes). There are programs for the Amiga which will let you do all that and more. Beyond being perfectly suited for desktop publishing, the Amiga has one major advantage over other systems. Since it is multitasking, Amiga can run as many different programs (providing they are properly coded) as your system's memory can hold. You don't have to abandon one program and load another to make a minor change and then reload the original again. This ability will be appreciated the first time you import a graphic which faces right when you need it to face left. With the proper software, you can return to the Workbench (or open a new CLI window), open your graphic program, import the ill-facing graphic, create a mirror image, save it to disk and return to the DTP program quicker than you can say, "Mabel, get your pen and ink, you drew the darn thing facing the wrong way!"

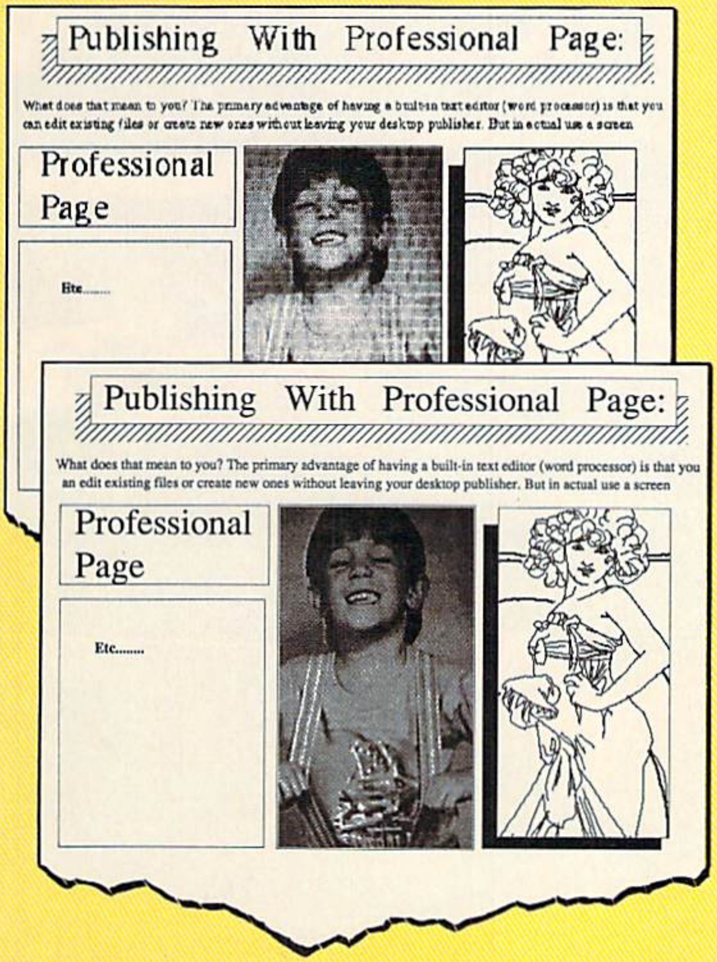
If you've waited until now to invest in an Amiga desktop publishing program, you will be happy with the present offerings. Most have gone through more than one revision which eliminated any existing bugs and produced enhanced, mature publishers ready for serious use. If you're already using one of these programs, make sure you have the latest update.

Publisher Plus

Publisher Plus is the mature version of a very early Amiga publishing program. Its forerunner, called *Publisher 1000* (which many users felt was an adequate desktop publishing program), was retired sometime in 1988 and replaced with this more impressive, yet less expensive program (*Publisher 1000* retailed for $200).

At $99.95 *Publisher Plus* is unquestionably the least expensive desktop publishing program for the Amiga (and perhaps any 16/32-bit machine). I was so surprised at the bargain basement price I checked with the people at Brown-Wagh Publishing twice to be sure I had heard correctly. What does $100 buy? Like the other programs, *Publisher Plus* has a WYSIWYG (What-You-See-Is-What-You-Get) display, uses defined boxes to hold text and graphics and will print to any Preferences or PostScript-compatible printer.

As an entry-level publisher, *Publisher Plus* is an excellent buy. It can produce quality documents but has fewer options than the other programs and no "bells and whistles." My biggest complaints center around the way the program handles other devices. When a disk is accessed you must wait until it loads and displays the entire directory of the default drive before you can select a file or switch to another device. When dumping a document to a printer, the program is equally unforgiving. For instance, if you dump a document to a printer and decide to stop the printout before the printer is finished, you can't abort the operation gracefully with *Publisher Plus'* print routine. In testing the program I had to resort to turning off the printer and waiting for the system requester to tell me I had a printer or cable problem to escape. *Continued on page 115*





The same page on the same printer—a 24-pin Star MB24-10. Three of the packages support Postscript printing, and we tried those on a NEC Silentwriter LC890 laser printer.



Actionware Takes Aim at the Amiga Game Market

Have you been to a video arcade recently? If you have, then you may recognize the following games: *Crossbow, Combat, Chiller, Hogan's Alley, VS. Duck Hunt* and *Operation Wolf*. What is so special about this group of games? Give up? They all use light guns of some sort.

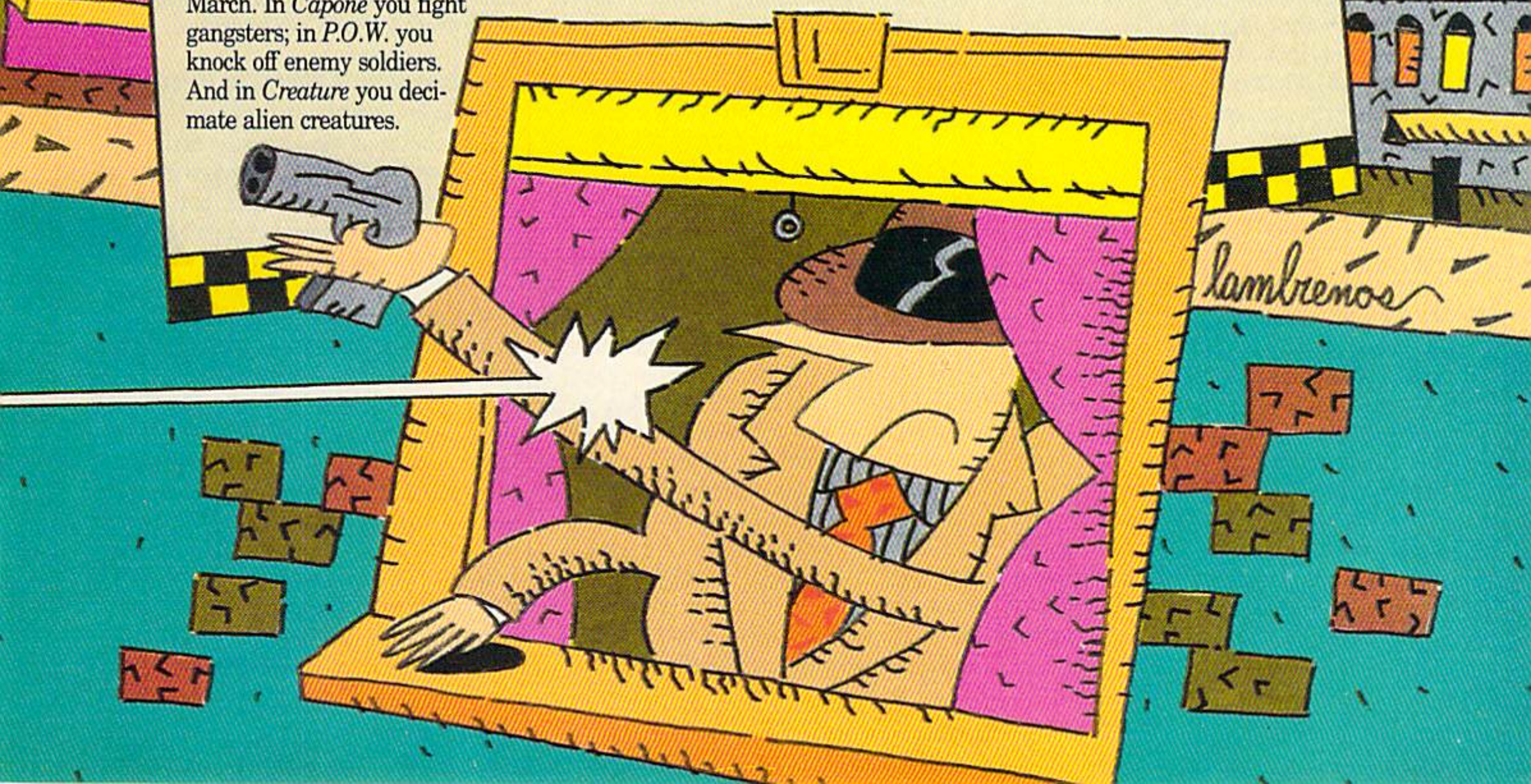
Light gun games are so successful when they are released in the arcades that game designers spend many months developing new systems for each one, advancing the technology and giving the arcade gamer more for his two bits.

If you've been wondering why such technology hasn't been brought to the home computer market, then check your local software store. Actionware is a relatively new company that has two titles currently available for Amiga users that use a light gun—the Actionware Light Gun to be specific. ***[Editor's Note:** Actionware is working on Commodore 64 translations as well.]* *Capone* and *P.O.W.* are now on the shelves, and *Creature* should be released for the Amiga in February or March. In *Capone* you fight gangsters; in *P.O.W.* you knock off enemy soldiers. And in *Creature* you decimate alien creatures.

Actionware's Beginnings

Actionware got its start in the creative and fun-loving mind of Richard Parry, president and hardware engineer. Parry has a diverse background that prepared him technically for the project of producing a light gun-based game for the Amiga computer. He earned a degree in electrical engineering and applied his skills to the field of speech and music synthesis. Founding Speech Systems, Parry developed speech and music synthesizers, as well as speech recognition systems for the Radio Shack Color Computer (CoCo). After seeing the Amiga, Parry ported over some of his work to the more advanced system in the form of *Symphony Songs*, a music program.

Working with the Amiga led Rich Parry to believe the Amiga would be the ultimate game machine. Rich was very interested in action games that require a lot of dexterity and concentration, so he decided to start a new company and market action games for the Amiga. But he needed something totally new to garner any attention from the soft-



ware-buying public and critical reviewers (like me). It was at this time that Parry went to an arcade for his son's birthday party and noticed a light gun game. He more than noticed it—he remembered the crowd of people surrounding it and the excitement with which the quarter-droppers gave up their candy money to fire a plastic gun at imaginary enemies.

This was the true beginning of Actionware. In Parry's own words, "Since there was so much action in the games I saw, I started a new company to specifically market action-oriented games using—at least for the present time and near future—a light gun." In order to bring his dream to reality, Parry needed to immediately staff his company, particularly in the areas of programming and graphic design. It was by chance that he met Pierre Maloka, Actionware's programmer who has been responsible for coding all of the company's products so far.

"I met Pierre at a local Amiga meeting. He sounded like he knew what he was talking about—and it turns out that he does," Parry explained indicating the coincidence of the two men being at the same meeting. Getting artists Brian Williams and Dana Dominiak of Digital Concepts, Inc. took a little more effort, but the results were just as beneficial to Actionware. "I read an article in a computer magazine about Brian Williams and the artwork that he's done. I looked at the top of the article and found out that Brian lived only ten miles away from me in Naperville, Illinois," said an elated Parry. He called Brian to convince him and his partner Dana to contribute artwork to the project and was thus able to provide art for Pierre who had already written the code to read the light gun and needed pictures to begin the project.

The artwork that Williams and Dominiak created was superb (witness *Capone* or *P.O.W.* on a 16-bit machine). At press time the Commodore 64 versions of the games were not ready—*P.O.W.* was just being completed, with conversion of the two programs to other machines imminent. After assembling the three creative talents for Actionware, Richard and company came up with the ideas for the first titles.

"The reason that we designed *Capone* was that we figured that we couldn't get away with killing good guys—we had to have the player kill bad guys in the game. It seems that most people think gangsters are bad guys," Parry revealed. His logic certainly worked, for *Capone* is the perfect introductory light gun game because the gun is the tool of the gangsters' trade.

With the same mentality, Actionware thought up *P.O.W.* and *Creature.* Parry credits John Rambo, the protagonist in *First Blood,* et al., for planting the idea for *P.O.W.*: "The inspiration for the game was mostly the Rambo character. I saw the macho qualities of Rambo as very popular with gamers and decided to base a game upon a renegade soldier with a dangerous search and rescue mission." The result was *P.O.W.*, a game even more intense and demanding than the company's first release.

The next stage was the important one for the Actionware games—design. But, before we get into Actionware's hectic design process, let's talk about that ubiquitous enemy to video gangsters in any Actionware-conquered Amiga, the Actionware Light Gun.

What Will Mom Think When She Sees You Pointing This at the Screen?

The Actionware Light Gun is not the first light gun to be used in the home by video sharpshooters. The Sega system introduced a light gun for its games a while back. A light gun on the Amiga, however, beats the pants off the Sega model. It is more effective on the Amiga because of the vast software capability differences between the two systems.

To produce a gun to use with his games, Parry played the role of hardware engineer and modified the Sega light gun to work with his software. He told me, "The original Sega gun will not work. More recently, the guns are being provided in a modified form by Atari. I'm trying to find other guns that are less expensive, so I can pass along the savings to the user." The Actionware Light Gun retails for $49.95, the Dual Gun Interface costs $39.95, and the price for *Capone* or *P.O.W.* is $39.95.

The Light Gun is what makes Actionware and the two titles I saw so special. Without it, the games just wouldn't be the same. In the early rounds of *Capone* and *P.O.W.* the gun may not seem necessary, since targets move slowly and so does your health gauge (due to the lack of successful enemy shots). The later stages, however, cry out for a trigger-happy juvenile-at-heart. The Light Gun works by flashing the screen when the trigger is pressed. A light-sensitive diode at the end of the gun barrel registers the flash and computes how high or low the gun is being held. It sends this data back to the Amiga to cause an appropriate response on the screen.

I found that—just like using a light pen—you need to hold the gun only a few inches away from the screen to be able to move back and forth quickly enough from target to target when the action gets super-fast. Aside from these stages, I kept the gun over a foot or two away from the screen to eliminate all the enemies that dared set foot within my Amiga. I tested Actionware's claim and stood back 15 feet from my Amiga and still cleared the first few rounds of *Capone* and *P.O.W.* After thorough testing, I came to the conclusion that the Actionware Light Gun is a great new way to play good guy on your Amiga.

What could be better than a light gun to get rid of those gangsters and soldiers? Give up? Two light guns, of course. If one isn't enough for your discerning taste or there is a long line of friends waiting to play with your new toy, grab a Dual Gun Interface and an extra Light Gun. The Interface is just a Y-adaptor that splices the signals and wires from two male game ports into a single female port that fits into your Amiga's game port.

Playing *Capone* or *P.O.W.* with two guns is a unique experience. You can eliminate the enemy quicker and see more of the game, as well as participate in a fun-filled action game with two players trying to clear a level and get a higher score than the opponent/partner. Parry commented, "A game that is played with two guns is hysterical to watch, as well as to play. I personally get more of a thrill playing a human than a computer." Unfortunately, the Amiga 1000 is unable to accept input from a Dual Gun Interface.

Actionware's Design Process

A whole lot of time, testing, retesting and evaluations went into the design of these games. The design process involved a lot of late-night phone calls and scrapping of game versions that didn't quite cut it. Parry remarked, "It was more like trial and error with the emphasis on whether the result was clever, neat and fun." Such dedication to a game is rarely seen in the software industry. Most companies try to get as many games to the consumer as possible without ever really trying them out on a critical crowd. Not Actionware.

The Actionware games were aimed at a specific audience. Parry said, "The person we had in mind was the 15-year-old kid who lives at the arcade, and we wanted the games to be exciting to that person. We've made it so that your reflexes have to be pretty good to finish the game. Per-

sonally, I've never made it past the warehouse in *Capone* and I'm 41." Actionware has definitely lived up to their intentions, but you don't have to be a teenager to play the games adequately. I am a 22-year-old video game nut, and I had no problem with *Capone* or *P.O.W.*

Also contributing to the smooth, yet detailed and hectic design of *Capone* and *P.O.W.* was "the fact that we're all within ten or 15 miles of each other," Parry revealed. "This has been a great asset for us. We had meetings weekly or twice weekly to talk about ideas, and being so close really helped the project move along quickly." Actionware's four talents blended together well in the final product. While helping to design the games, Brian and Dana also provided artwork to Pierre, who programmed it into the game. Parry joined the three in coordinating the project and making many specifications.

Capone, which took three months to complete, became available in May 1988. Parry explained, "Pierre was polishing his Amiga skills. He is primarily an IBM expert and needed to polish his skills and become acquainted with the Amiga. So that took a little bit longer than if he had to do it now. *P.O.W.*, on the other hand, should have taken only a month. It turned out to take nearly three months because so many changes were made." But, suffice it to say that the final version of *P.O.W.* was worth waiting three months for.

Parry acknowledged the problems that made the design of the first two Actionware titles so time-consuming: "It was really trial and error—a lot of changes were made, and it really could have been done more quickly had we really thought it out. It was so new with the gun and everything. With *Creature*, before we ever put a pixel on the screen, we put the entire scenario of the game on paper before investing hundreds of hours of programming to realize that the game isn't fun enough yet."

Capone

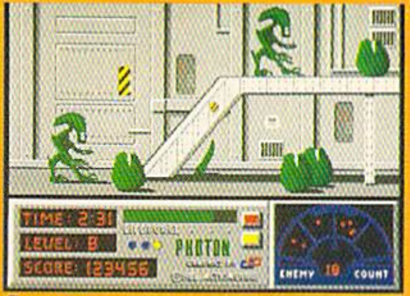
Capone takes you back to the '20's, when gangsters ruled Chicago. You play the part of a gumshoe alone on a deserted street. You hear the shattering of glass and notice a mobster firing at you from across the street. You duck behind a parked car and continue to fire at ever-increasing numbers of gangsters who appear out of windows as you make your way slowly up the street.



Capone



P.O.W.



Creature



Actionware Light Phaser Guns

In *Capone* you must shoot the enemy mobsters before they get to you. Most of the screen is dedicated to showing a highly realistic city street. Gangsters pop up mostly in windows, but are seen in other places as well. The screen scrolls slowly as you move from section to section of the street. There are a few major sections, with a slight breather in between. These sections are: post office, grocery, bank, barber shop and warehouse. You must go inside the warehouse and bank after reaching them as well. Concentrate on getting rid of the criminals as soon as they appear on the screen. Any time wasted in shooting them is time in which they can shoot you.

When you are shot, a health bar at the bottom of the screen decreases with every well-placed hit. In addition to the health bar, your score, number of bullets remaining for dispatch, and number of game lives left are shown. Every time the health bar reaches zero, you lose a game life. Starting out with three lives, depicted by three guns, you work your way up to a maximum of six after gaining a certain number of points. As you shoot, a bullet is erased from the picture of six bullets in the status box. If you shoot too quickly, the six bullets are erased, and you have to wait for at least one to come back before shooting again. Fortunately, the bullets reappear as quickly as you can press the trigger. I found this to be an unnecessary element of the game that should be removed in future versions.

In addition to the gangsters who pop up in windows, some venture along the street, turn toward you and shoot. You have to shoot them even more quickly than the ones in the windows. To make matters worse, innocent bystanders, kids on skateboards, dogs and cats appear on the street. Your aim has to be perfect or you lose points for hitting people and pets. Also, there are four innocent people who pop up in the windows of the buildings whom you can't shoot. The people in the windows are none other than Pierre (glasses), Rich (light hair), Brian (dark hair) and Dana. How's that for modesty?

Certain special elements of *Capone* make it more interesting to play. Every now and then, a tommy gun appears on the screen. If you shoot the gun, your gun turns into an automatic machine gun, and you can hold down the trigger to get rapid

Continued on page 114

1989 Graphics Contest

COMMODORE 64 & AMIGA

Commodore Magazine is sponsoring our fourth annual Graphics Contest. Two categories are available for aspiring Commodore artists: Commodore 64 and Amiga. Winners will receive a cash prize, and the winning graphics screens will be published in the June 1989 issue of _Commodore Magazine_.

COMMODORE 64 CATEGORY PRIZES

Grand Award: $500 and publication in *Commodore Magazine*
Five Runners Up: $100 and publication in *Commodore Magazine*
Honorable Mention: Publication in *Commodore Magazine*

AMIGA CATEGORY PRIZES

Grand Award: $500 and publication in *Commodore Magazine*
Five Runners Up: $100 and publication in *Commodore Magazine*
Honorable Mention: Publication in *Commodore Magazine*

GRAPHICS CONTEST RULES

1. This contest is strictly for amateur artists. Anyone who derives more than 10% of his/her annual income from the sale of original artwork is ineligible.
2. Employees of Commodore Magazine, Inc., Commodore Business Machines, Inc., Commodore Electronics Ltd., Commodore International Ltd., their advertising and promotional agencies and their immediate families are not eligible to enter this contest.
3. Each entry must be wholly the product of the developer in whose name the entry has been submitted. Copyrighted images are not eligible. This includes record album covers, movie figures, famous paintings and cartoon characters. Outside assistance is expressly prohibited and will provide cause for disqualification.
4. A maximum of two screens per person is allowed. You may submit either two screens for one computer or one screen for each computer. If a contestant submits more than two screens for consideration, all of that person's entries will be invalidated.
5. All entries must be submitted on disk, 1541 format for the Commodore 64 and 3.5-inch format for the Amiga, with the following marked clearly on the disk's label:
  a. Contestant's name, address and phone number
  b. Picture title(s)
  c. Graphics package or programming aids used to create the graphics
  d. The words ''GRAPHICS CONTEST''

A photo of the screen display or a printed copy of the screen does not constitute an acceptable entry.
6. All entries must be postmarked no later than January 31, 1989. Mail to: *Commodore Magazine,* 1200 Wilson Drive, West Chester, PA 19380, ATTN: GRAPHICS CONTEST.

GENERAL CONDITIONS

- Graphic screens are judged on originality, creativity and best use of the computer's unique graphics features.
- Entries will be judged by the staff of *Commodore Magazine.*
- Make sure your mailer will protect your disk from damage. Affix sufficient first-class postage. Mail your disk and the official entry blank to the address shown above. *Commodore Magazine* accepts no responsibility for lost or damaged entries.
- Entries will become the property of *Commodore Magazine,* which reserves the right to adapt, use or publish all entries received. No entries will be returned, so be sure to make a copy of your entry before you submit it to the contest.
- Non-winning entries will not be acknowledged. Winners will be notified by March 15, 1989. Taxes on cash prizes are the winners' responsibilities.

(PLEASE PRINT)

Name ______________________
Address ______________________
City ______________________
State ______________ **Zip** ______________
Phone (____) ______________ **Age** ______________
Signature ______________________
Parent's Signature ______________________
(If Contestant is Under 18)

Picture Title #1 ______________________
Computer ______________________
Graphics Package/ Programming Aid Used ______________________
Picture Title #2 ______________________
Computer ______________________
Graphics Package/ Programming Aid Used ______________________

ALL ENTRIES MUST BE POSTMARKED BY JANUARY 31, 1989. MAXIMUM 2 SCREENS PER CONTESTANT.

by Shay Addams

Dungeons & Dragons
The Computer Game

News and opinion from a leading explorer of those fantasy realms called adventure games.


DENISE FALESKI VITOLLO

I first encountered *Dungeons and Dragons* while researching an article on board games ten years ago—and found it most intriguing because it was the only board game in the bunch that didn't use a board. But I gave it away after doing the story, because *D&D* is just too involved. You have to round up a group of people who know how to play, supervise the game (unless you can convince someone else to do it), then roll the dice, draw maps, look for the missing die that rolled under the table . . . see what I mean?

When I started fooling around with BASIC a few years later, I had the brilliant idea that a computer program would be the perfect medium for games like *D&D*, and for dozens of "paper and pencil" role-playing games had cropped up by this time. Unfortunately, as so often happens with my brilliant ideas, someone else had the same idea. Several someone elses, this time: *Temple of Apshai, Ultima* and *Wizardry* soon ushered in a new genre of computer entertainment.

Though it inspired these and every other computer RPG ever written, *D&D* was never turned into a computer game until TSR licensed an official version of *Advanced Dungeons and Dragons* last year. I was surprised when I heard it went to Strategic Simulations, since many of their in-house programs have lacked the polished feel of games from other companies—and also suffered from overly complex interfaces and even more complicated manuals.

But I was even more surprised when I played *Pool of Radiance* (the first installment), for it looks sharp, plays smoothly and has an adventurer-friendly interface. The combat system is similar in concept to the one introduced in SSI's *Wizard's Crown*, which was programmed by one of this game's key designers, Keith Brors. Writers at TSR came up with the story and setting, the "SSI Special Projects Team" did the programming and actual game design (which explains why we haven't seen any new in-house titles from SSI in the past year), and people from both companies collaborated on puzzles. The program covers both sides of four disks and is not copy protected.

It is set in the Forgotten Realms, home of a 1000-year-old city called Phlan. Deriving his powers from the fabled Pool of Radiance, the evil Tyranthraxus has launched an invasion of monsters that can only be stopped by you (who else?) and a band of six Fighters, Thieves, Magic-Users and Clerics, supported at times by NPC's (non-player characters) who can be hired in the Training Hall or picked up during your travels. Only a small part of the town survives and is inhabited, but you can explore its shops, Inns, Temples and City Hall without fear of being attacked by monsters.

In City Hall you can pick up a Commission, this game's equivalent of a quest, in hopes of a rich reward. After ridding the nearby slums of monsters, you'll be able to reach other parts of town and eventually explore the Wilderness areas. Along the way you'll find a total of 18 mazes to master, each laid out on a 16 × 16 square grid and with a specific goal to accomplish.

First-person graphics, the kind seen in *Bard's Tale*, are employed in town and dungeon scenes. Spot animation brings characters and monsters to life, and the illustrations sport a distinctive style and personality (some graphics were done by Westwood Associates, as well as elements of the programming). An automapping feature replaces the picture with an aerial view of the area immediately surrounding the party, and maps in one of the manuals provide a general layout of many mazes and the outdoors area.

The first-person scenes are nothing new, but the combat system is unique. Reminiscent of the *Wizard's Crown* system, it is radically different. In an overhead view shown from an oblique angle, each character and monster is represented with its own icon. To maneuver your crew into effective positions and have them use their weapons advantageously, you can exert individual control over each member, almost like playing a mini war game. Or you can have the computer direct the actions of one or all, switching back to manual control at any time during the battle.

With cursor keys or joystick, you move through a horizontal menu bar that lists combat options, but there aren't so many of them that it takes you a month to learn them all. Spell casting is performed by simply choosing a spell from a menu in your Magic Book (the magic system encompasses two magic classes, magic scrolls and over 50 spells). Battles are well-animated, with arrows shooting through the air and puffs of smoke encircling the heads of those affected by spells.

If you enjoy tactical combat, this is the quest for you. Battles can last 30 minutes or more, since you may face several dozen monsters at a time and must wait for the computer to individually assign orders to

Continued on page 109

by Robert W. Baker

Handling Archives

Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.



I have received several questions on the ARC utility that seem to indicate how confused some people are about this very handy program. So this month I'll go over some helpful hints on making the most of ARC in relation to your telecomputing efforts.

First of all, when you attempt to download files from the public domain library areas of Q-Link or other online services, you'll soon notice a number of common file suffixes that are used. Of particular interest are the ".ARC" suffixes that indicate file archives created with the ARC utility. If you download one of these files you cannot use the file as received until you "unarc" the files. This involves using the ARC utility to extract the original files from the archive file you obtained.

When you go to extract or unarc the files from the archive file, first be sure you have enough room for all the files that will be created. Don't forget that the files are compressed when put into the archive file, so the final files can take up much more disk space than the original archive. You can easily check the number and size of the original files with the arc utility without changing anything on the disk. Just use the arc LIST option:

```
arc/l file-name.arc
```

This will give you an idea of what is included in the archive file and whether or not it will fit on one or more disks. If there is enough room to unarc all the files to the same disk, it can be done with one simple command:

```
arc/x file-name.arc
```

Otherwise, you may have to extract only a few files at a time and move them to another disk. To extract individual files you use the same extract option, but simply list the desired files following the archive filename:

```
arc/x file-name.arc file.1 file.2 file.3
```

If you have two disk drives, the process can be much simpler and faster. Simply put the archive file in one disk drive and a blank formatted disk in the other drive. Make the blank disk your current disk, by entering the drive letter followed by a colon and RETURN. Then, enter the "arc" command with the drive letter indicated as part of the arc-file's filename.

As an example, lets assume you have two drives that are set up as device 8 and 9 on your 64. With arc, your main device 8 drive will be the A: drive, while the device 9 drive will be the C: drive. Put the arc file into drive 8 and the blank disk in drive 9, then enter the following commands:

```
c:
arc/x a:filename.arc
```

to extract all the files from the archive file on drive 8 and place them on drive 9.

As mentioned, having two drives when extracting ARC files also helps speed things up. With a single drive, the drive read/write head must be constantly moving between the input file being read (the archive file), and the new files being written (the files being extracted). With two drives there is much less head motion, so everything is much quicker.

As a general rule, I always list the contents of an archive file before I attempt to extract the files. Not only does it tell me how big the files are and how many there are, but it also gives me some hope that the file is a valid archive. Actually, there is a test option under arc that allows you to test the archive file integrity. However, this is generally of more help when creating archive files when you want to check that the file was created OK without extracting the individual files.

If you're downloading files from other networks or local bulletin boards, keep in mind that archive files created on different systems may not be compatible. Archives created on an IBM system usually cannot be extracted on a Commodore 64 or 128 system or vice versa. One handy exception, however, is the ARC utility on the Amiga which has an option to process IBM archives. The "I" option on the Amiga ARC allows you to read or write IBM-format archive files.

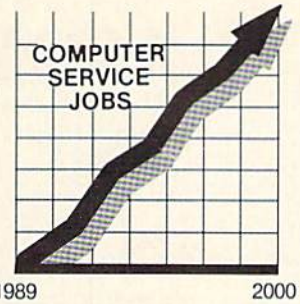
If you are using the Amiga or IBM ARC utilities, bear in mind that the command format for these versions of ARC are slightly different. On the 64/128 version, the option is entered after the "arc" command with a slash between them, like: arc/x filename.arc to extract files. On the IBM version, the options are entered after the "arc" command with a separating space: arc x filename.arc

The Amiga version uses a syntax that is identical to that used on UNIX systems, with the options having a dash prefix: arc -x filename.arc and multiple options may be combined. So, be sure to remember to use the proper syntax for the correct system. If in doubt, entering the "arc" command with no options or parameters will usually give you a list of the proper

Continued on page 121

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Accredited by the National Home Study Council 000-0000

by Mark Jordan

Font Fun with geoPublish

by Mark Jordan

Pumping GEOS

Vol. 1, Num. 5

As you can see, this month's **Pumping GEOS** is straight from the dot matrix printer. I am doing so for several reasons. For one, the theme of this month's column is fonts, particularly the misuse of such. And there is no way to demonstrate what I'm talking about without actually showing you the printed page.

For another thing, I have been including **GEOS** printouts each month to show users some of the things that can be done using nothing more than a **Commodore 64**, a dot matrix printer, **GEOS**, and a little imagination. In case you're wondering what printer I've been using, it's a **Star SG-10**, an ancient fellow in today's computing world.



Highly technical computer joke

By the way, you may notice that this month's printouts look sharper than those of the past. I used a special printer driver developed by Douglas Blakely for Epson-compatible printers. It appeared in the July 1988 issue of **Compute!'s Gazette.**

Finally, I just thought it would be fun to do a two-page spread with **geoPublish**. The **Pumping GEOS** format lets me puts clumps of information, ideas, and fun here, there, everywhere. When computing ceases to be fun is when I pack it up and head for California.

The only thing that concerns me about this idea is that everything you see on this page comes to you unedited by the good folks at West Chester. Any typos or other mistakes cannot be laid at the feet of anyone except me. And I'm not used to operating without a scapegoat handy. Just ask my wife and kids. And dog.

* * *

I have stated on more than one occasion that fonts are the glory of **GEOS**. They can also be its downfall.

You see, there is a tendency when people first get hold of a font-laden product like **GEOS** to go hog-wild. For example, In the middle of a perfectly reasonable paragraph, they might slip in

STADIUM font.

Well, there's nothing wrong with a font change every once and awhile for effect, but one must be sure of the effect.

So how does one know what font will yield what effect? Easy: just go to the definitive work on the subject, **Fonts Finesse,** by me. It's over there on the next page.

Vive le Font (within limits).

* * *

Did you notice anything unusual about the line to the right of the picture that reads "GEOS to go"? Originally, big, gaping spaces were inserted between the words to justify the line. To lessen the effect, I manually inserted spaces between ***letters***. Try this when you find justification spaces too glaring. With a little tinkering, it works.

Fonts Finesse

Rule 1: Never use a goony font like telegraph for serious work. Seriously.

Rule 2: Use big, fat fonts when you're feeling aggressive. For example, "You're fired!" looks great in Boalt.

Rule 3: If a font leans forward (like **Tolman**) it's a happy font. Use it for upbeat messages such as **Elvis is alive and selling life insurance!**

Rule 4: Tall, skinny fonts like Elmwood should be used by polo players and other wimps. Real men never use a font that sounds like the name of a subdivision.

Rule 5: Mykonos sounds like a Japanese font. I kind of like its looks but I'm sticking with American fonts. That's just the kind of guy I am.

Rule 6: Fonts with a hi-tech look, like Cory, should be reserved for hi-tech messages. Don't use them for such traditional things as wedding announcements or obituaries.

Rule 7: Avoid the overuse of font styles, even if you truly believe all your words are important.

Rule 8: Avoid using too many fonts on a page. Most GEOS applications mercifully limit you to 7 or 8 but some people figure out ways around such limitations (see sidebar below).

Rule 9: Bigger is not always better. When you really want to get someone's attention, switch to University 6-point. (See what I mean?)

Rule 10: Plan ahead. Using a big size for effect only to run out of room is dumt

Pumping GEOS

Get Gobs of Fonts on Every geoPublish Page

What's the secret to getting 10, 15, or more fonts on one geoPublish page? The answer is easy: read how I did it.

What I did in the section above was simply to write the entire document on geoWrite using as many fonts as geoWrite allows. Then I printed it to disk using the Page Paint driver. Once done, I loaded the resulting geoPaint file into geoPaint and saved it in six segments to a Photo library.

To do that I double-clicked the Edit box and copied the entire window with the Edit menu. Then I called up the Photo Manager and pasted in it. I exited the Photo Manager, moved gingerly down the screen to the next window of data, and repeated the process until I had saved the entire file.

Before booting up geoPublish, I made sure that both Photo Manager and the correct library were on my disk. Then, I went directly to Photo Manager and copied a window with the edit menu. I exited Photo Manager, entered Graphics mode, and zoomed in on the section of screen I wanted. Why zoom? To make it easier to line up the bitmaps.

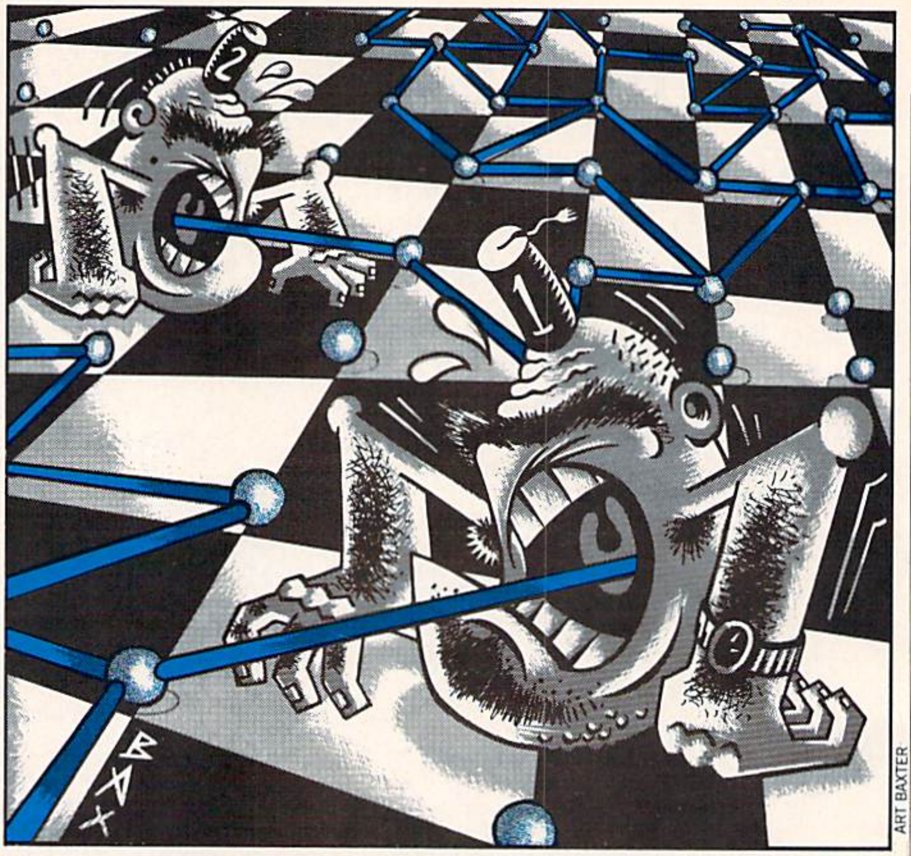
Next, I clicked the bitmap icon on the toolbox and carefully placed my crosshair cursor where I wanted the upper-left corner of my bitmap to be. I was 1/6 done. I repeated the process five more times.

Well, maybe it wasn't so easy. But thanks to an REU, it wasn't as bad as say, butchering buffalo or something like that.

by Robert Rossa

Graphbusters!

for the Commodore 64



ART BAXTER

Graphbusters! is a game for two players. It is played on an undirected graph. The grid is a set of points, all of which are connected by at least one path. Some points are connected by many paths. The program draws a graph randomly on the screen of the Commodore 64 and then places the two players randomly. The two players are identified by the numerals 1 and 2. The players take turns moving from one point to another which is not occupied by the opposing player. Each move erases the path that was used. The game ends when a player can no longer move or gives up. Moves are made by entering a number from 0 to 7. Zero is a move north; the numbers increase clockwise for eight moves representing the main directions on a compass. Directions for the moves are displayed when the program runs.

Here is a description of what the main variables do, in case you want to change something. P(0) and P(1) are the player tokens. The arrays "O" and "D" give the current locations of the players; "O" stands for "over" and "D" for "down." "V" is a two-element array that keeps track of the victories for each player. "CO" is the color of each player's token. The array "A" holds the poke values for the connections in the eight possible directions; the graph also needs a cross character "CR" and vertex characters "OH" and "SO" (which stands for "solid"). "S" is the screen location. "B" and "C" are constant arrays that tell how far vertically and horizontally to go to complete a move in a given direction. "N" is the number of moves the graph generator will make; and this constant can be changed to produce more or less complex playing boards. Finally, "PN" is the current player number, always 0 or 1.

Experienced players may want to delete line 10, which invokes the subroutine that prints directions on the screens. Remember that the playing boards are generated randomly, so some of them will be more interesting than others.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Graphbusters!

```
10 GOSUB 1280'BEMX
20 DIM P(1),O(1),D(1),V(1)'BTYC
30 DIM CO(1):CO(0)=1:CO(1)=1'DTAE
40 FOR I=0 TO 7:READ H(I),L(I)
   :NEXT'FOWF
50 DATA 16,195,18,209,21,31,22,96,25,
   30,28,49,31,165,33,135'BBPL
60 V=54296:W=54276:AA=54277:HF=54273
   :LF=54272:SS=54278:PH=54275
   :PL=54274'ILMV
70 DATA 66,78,67,77,86,87,81,177,
   050'BDTJ
80 DIM A(7):FOR I=0 TO 3:READ A(I)
   :A(I+4)=A(I):NEXT:READ CR,OH,SO,
   P(0),P(1)'JSWS
90 X=RND(-TI):S=1024'ELYK
100 DATA-2,0,-2,2,0,2,2,2,2,0,2,-2,0,
    -2,-2,-2'BMKC
110 DIM B(7),C(7)'BJUX
120 CM=55296-1024 :CO=13 :C1=250'EWBE
130 FOR I=0 TO 7:READ B(I),C(I)
    :NEXT'FOHD
140 N=300:REM NUMBER OF MOVES USED IN
    CREATING GAME'CLOK
150 PRINT"[CLEAR]":FOR I=55236 TO
    56235:POKE I,14:NEXT'GSWH
160 REM PICK A STARTING POSITION'BVPH
170 U1=INT(RND(X)*20)*2'FKQH
180 V1=INT(RND(X)*10)*2'FKQI
190 POKE S+U1+V1*40,SO'EKPJ
200 POKE S+U1+V1*40+CM,C1'FMCC
210 FOR I=1 TO N'DDIY
220 M=INT(RND(X)*8)'EHBC
230 U2=U1+C(M):IF U2<0 OR U2>38 THEN
    220'HTHI
240 V2=V1+B(M):IF V2<0 OR V2>20 THEN
    220'HTBJ
250 L1=S+U1+V1*40'EJRF
260 L2=S+U2+V2*40'EJUG
270 L3=S+U1+V1*40+C(M)/2+B(M)*20'IUVM
280 POKE L1,OH :POKE L1+CM,C1'DNEI
290 POKE L2,SO :POKE L2+CM,C1'DNMK
300 G=A(M)'BFPX
310 H=PEEK(L3)'CFOA
```

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```
320 IF M=0 OR M=2 OR M=4 OR M=6 THEN
    360'JLMH
330 IF H=A(1)AND G=A(3)THEN G=CR'GNIG
340 IF H=CR THEN G=CR'EGDF
350 IF H=A(3)AND G=A(1)THEN G=CR'GNII
360 POKE L3,G:POKE L3+CM,CO:  U1=U2
    :V1=V2'FWVL
370 POKE V,15:POKE AA,88:POKE PH,15
    :POKE PL,15:POKE SS,89'FDXN
380 POKE HF,H(M):POKE LF,L(M)
    :POKE W,65:'DVSL
390 NEXT I'BBCG
400 POKE W,0'BDXY
410 POKE L2,OH :POKE L2+CM,C1'DNBE
420 REM PLACE  THE PLAYERS'BPTE
430 FOR I=0 TO 1'DDDD
440 GOSUB 520'BDKD
450 IF PEEK(L1)><OH THEN 440'FJJI
460 POKE L1,P(I):O(I)=U1:D(I)=V1'DVNK
470 POKE L1+54272,CO(I)'CNAJ
480 NEXT I'BBCG
490 PN=0'BDCI
500 GOTO 620'BDHA
510 FOR KK=1 TO 2000:NEXT KK
    :RETURN'FLVF
520 U1=INT(RND(X)*20)*2'FKQG
530 V1=INT(RND(X)*11)*2'FKRH
540 L1=S+U1+V1*40'EJRH
550 RETURN'BAQE
560 POKE S+55208,14'CJPI
570 PRINT"[HOME]";:FOR I=1 TO 23
    :PRINT"[DOWN]";:NEXT:RETURN'HKVM
580 PRINT"PLAYER ";CHR$(49+PN);
    " TOKEN[SPACE4]YOUR MOVE?[SPACE8]
    "'DIBS
590 FOR I=1 TO 10:GET K$:NEXT'FIIM
600 POKE S+936,P(PN):POKE S+55208,
    CO(PN)'EYGI
610 RETURN'BAQB
620 REM CAN THE CURRENT PLAYER
    MOVE?'BYRJ
630 L1=S+O(PN)+D(PN)*40:F1=0'FTIK
640 FOR J=0 TO 7'DDKG
650 U2=D(PN)+B(J)'CLRI
660 V2=O(PN)+C(J)'CLAK
670 IF V2<0 OR V2>38 THEN 730'FKNM
680 IF U2<0 OR U2>20 THEN 730'FKCN
690 IF PEEK(S+U2*40+V2)><OH THEN
    730'IOJR
700 L2=L1+B(J)*20+C(J)/2'FPSH
710 IF PEEK(L2)=A(J)THEN F1=1:J=7
    :GOTO 730'HSQK
720 IF PEEK(L2)=CR THEN F1=1:J=7
    :GOTO 730'HQUL
730 NEXT J'BBDE
740 IF F1=0 THEN 1130'DHEI
750 GOSUB 560'BDOH
760 GOSUB 580'BDQI
770 GET A$:IF A$=""THEN 770'EINM
780 IF A$="G"THEN 1110'DGIM
790 IF A$<"0"OR A$>"7"THEN GOSUB 1070
    :GOTO 750'HMTR
800 M=VAL(A$):FOR I=1 TO 10:GET A$
    :NEXT I'HPUJ
810 U2=D(PN)+B(M):V2=O(PN)+C(M)'EXAL
820 IF U2<0 OR U2>20 THEN GOSUB 1070
    :GOTO 750'HPDL
830 IF V2<0 OR V2>38 THEN GOSUB 1070
    :GOTO 750'HPOM
840 L2=S+U2*40+V2'EJUK
850 IF PEEK(L2)<>OH THEN GOSUB 1070
    :GOTO 750'HONO
860 L3=L1+B(M)*20+C(M)/2'FPAO
870 C9=PEEK(L3):IF C9=CR OR
    C9=A(M)THEN 890'HUBS
880 GOSUB 1070:GOTO 750'CIEM
890 REM MAKE THE MOVE'BLVO
900 POKE L2,P(PN):POKE L2+54272,
    CO(PN)'DXQK
910 POKE L1,OH:F2=0:POKE L1+54272,
    C1'EUHL
920 POKE V,15:POKE AA,88:POKE PH,15
    :POKE PL,15:POKE SS,89'FDXO
930 POKE HF,H(M):POKE LF,L(M)
    :POKE W,65:FOR TM=1 TO 100:NEXT
    : POKE W,0'IHJS
940 IF PEEK(L3)=CR AND A(M)=A(1)THEN
    POKE L3,A(3):GOTO 970'IATR
950 IF PEEK(L3)=CR AND A(M)=A(3)THEN
    POKE L3,A(1):GOTO 970'IATS
960 POKE L3,32'BFQK
970 FOR J=0 TO 7'DDKM
980 V3=O(PN)+C(J)/2:IF V3<0 OR V3>38
    THEN 1020'IYHV
990 U3=D(PN)+B(J)/2:IF U3<0 OR U3>20
    THEN 1020'IYIW
1000 Q=PEEK(S+V3+U3*40)'FKVX
1010 IF Q=A(J)OR Q=CR THEN F2=1
     :J=7'HOHC
1020 NEXT J'BBDU
1030 IF F2=0 THEN POKE L1,32'EIXA
1040 O(PN)=V2:D(PN)=U2'CPEC
1050 PN=1-PN'CFBA
1060 GOTO 630'BDIA
1070 GOSUB 560'BDOB
1080 PRINT"CAN'T GO THERE[SPACE24]
     "'BANI
1090 GOSUB 510'BDJD
1100 RETURN'BAQT
1110 GOSUB 560:PRINT"PLAYER
     "CHR$(PN+49)" GIVES UP![SPACE11]
     "'EKPF
1120 GOTO 1150'BEEW
1130 GOSUB 560'BDOX
1140 PRINT"PLAYER ";CHR$(PN+49);
     " CANNOT MOVE[SPACE11]"'DIOI
1150 GOSUB 510'BDJA
1160 WW=1-PN:LL=PN'DKBE
1170 GOSUB 560'BDOC
1180 V(WW)=V(WW)+1'CLEG
1190 PRINT"PLAYER ";CHR$(WW+49)" HAS
     NOW WON "V(WW)" GAMES TO PLAYER
     ";'DNJR
1200 PRINT CHR$(LL+49)"'S "V(LL)'DLIA
1210 GOSUB 510'BDJW
1220 GOSUB 560'BDOX
1230 PRINT"FOR ANOTHER GAME ENTER Y
     [SPACE25]"'BADI
```

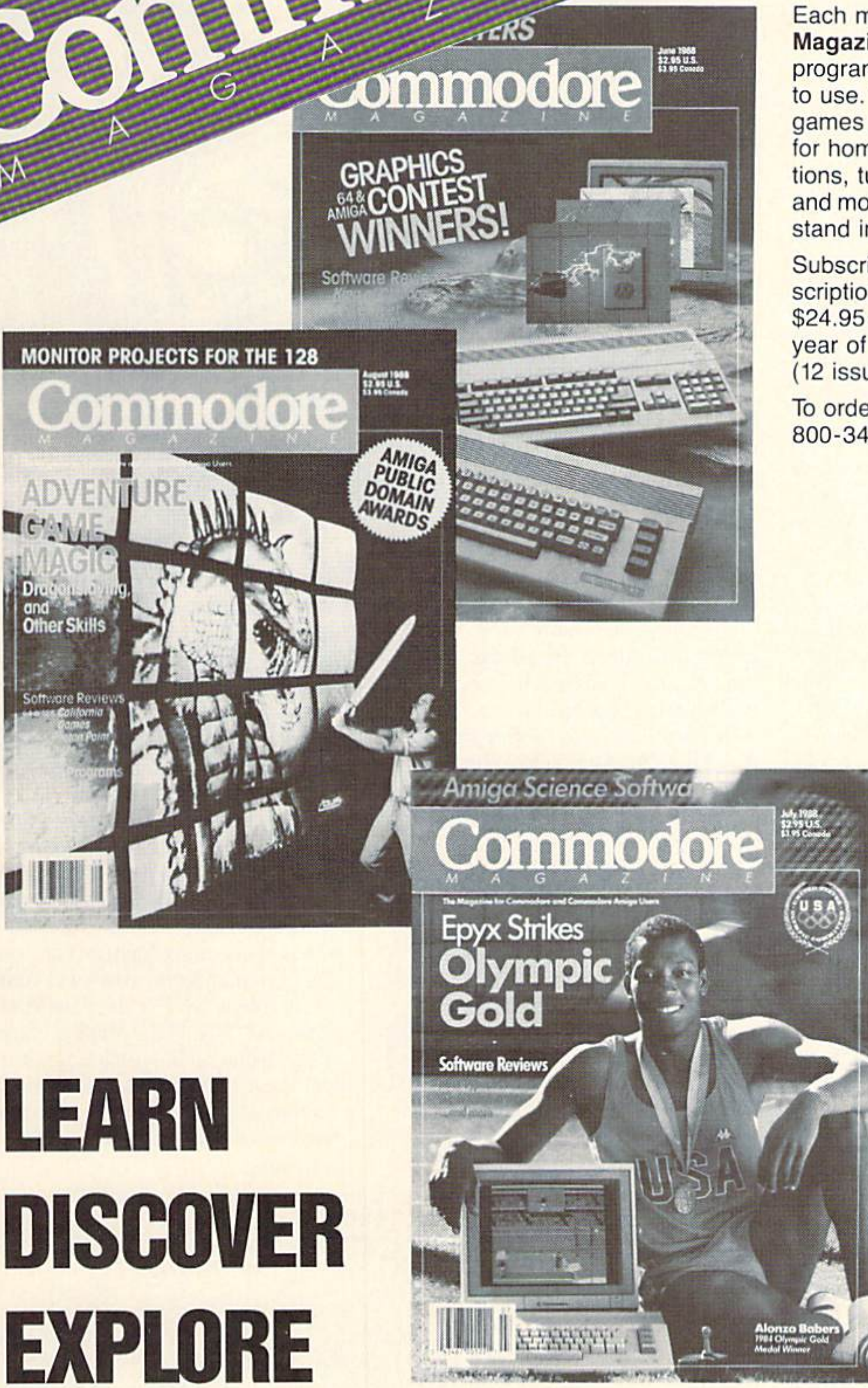
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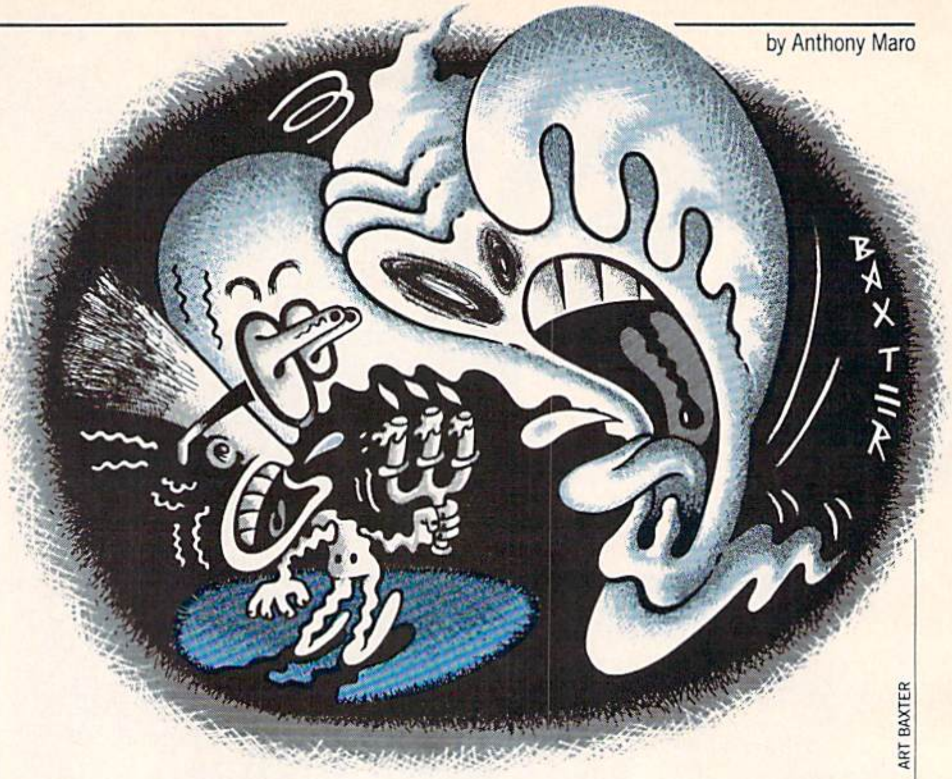


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by Anthony Maro

The Castle of Spirits
for the Commodore 64



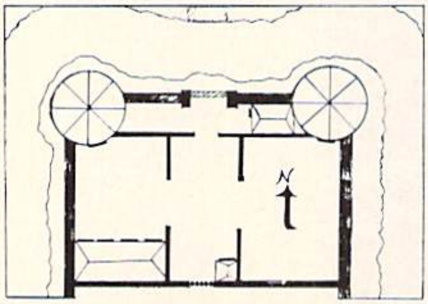
ART BAXTER

The Castle of Spirits is a miniature interactive fiction game which has many of the features found in larger commercial games. In order to save memory, the routine which interprets your input will only understand two words or commands at a time. Normally commands are expressed as verb-noun combinations like "go north" or "take box." If you want to do something with an object that has a two-word name (e.g., oil can) use the last word (e.g., "take can").

The first time you enter a room, its description is printed. Each subsequent time you enter a room, only the name of the room will be printed. To review a room description, type "look" or the single letter "L."

Moving around the castle is simple. I have included a floor plan of the castle (not a drawing of a cart on wheels) that will help you keep from getting lost. Type "go north" and you will walk north, as long as nothing blocks your way. To save keystrokes you can type "N," "S," "E," "W," "U," "D" for "north," "south," "east," "west," "up," and "down," respectively.

To find out what you are carrying, type "inventory" or "I." A list of all items will be displayed. All items that you drop will be listed in the room description when you "look."



To find out how many moves have passed, type "time." Be careful, doing this uses up a move, so don't do it if you think you're pressed for time.

The word-handling routine, or "parser," is found in lines 100 to 180. First, it searches through what you have typed for a space. If none are found, it accepts all the input as the first word. If a space is found, then everything before the space is considered to be the first word, and everything after the space is considered to be the second word. Then the parser checks to see if it understands the two words by looking them up on a list. If it understands the first word it assigns a numerical value to the variable W1 corresponding to that word's position on a list. If the parser doesn't understand the word, it says so and returns to the beginning of the input routine.

The second word is now checked. If the parser doesn't understand the word, it will then check to see if the word is an object name. If not, the parser reports that it doesn't understand the phrase and restarts the input routine. If the word is understood then the numerical value of the word's position on the checklist is assigned to W2. If a second word was not typed, then W2 will equal zero.

Memory limitations required that I put in only a few rooms and a limited vocabulary. Feel free to expand on this as you like. A section of variables at the top of the program are defined to indicate how many of one thing there is. For example, "NV" is equal to the number of verbs used in the game, "NO" is the number of objects, and "NR" is the number of rooms. After adding to the particular variable you want to change, add new data to the statements starting at line 1000 which correspond to the variable you are changing. ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Castle of Spirits

```
10 POKE 53280,0:POKE 53281,0:M=0:RM=1
   :PRINT CHR$(147);CHR$(14);
   CHR$(30)'INMK
20 NR=10:NV=22:NN=14:NO=7'ESIF
25 DIM MP(NR,7),VB$(NV),NO$(NN),
   RN$(NR),OB$(NO,1),OB(NO)'BYEO
30 FOR I=1 TO NR:FOR J=1 TO 6
   :READ MP(I,J):NEXT J,I
   :FOR I=1 TO NV:READ VB$(I)
   :NEXT'NIHO
40 FOR I=1 TO NN:READ NO$(I):NEXT
   :FOR I=1 TO NR:READ RN$(I)
   :NEXT'KACL
50 FOR I=1 TO NO:READ OB$(I,0)
   :READ OB$(I,1):READ OB(I):NEXT'HEKL
60 MP(1,7)=1:PRINT CHR$(18)RN$(RM)
   :GOSUB 870:GOTO 930'FDYL
70 IF INT(RND(0)*100)+1<5 THEN
   930'HNQK
80 IF M=14 AND OB(5)>0 THEN 1010'FNEJ
90 IF M=14 AND OB(5)=0 THEN GOSUB
```

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```
   1430'GNVL
100 INPUT"[DOWN,SHFT W]HAT NOW";AM$
    :PRINT:IF LEN(AM$)>20 THEN 70'GPIE
110 FOR I=1 TO LEN(AM$)
    :IF MID$(AM$,I,1)<>" "THEN NEXT
    :W1$=AM$:W2$="":GOTO 130'NHWL
120 W1$=LEFT$(AM$,I-1):W2$=MID$(AM$,
    I+1,15)'GBSG
130 FOR I=1 TO NV'DETA
135 IF VB$(I)<>LEFT$(W1$,3)THEN NEXT
    :PRINT"[SHFT I] DON'T KNOW "W1$
    :GOTO 70'IUJQ
140 W1=I:IF W2$=""THEN W2=0
    :GOTO 180'GOVG
150 FOR I=1 TO NN:IF NO$(I)=LEFT$(W2$,
    3)THEN W2=I:GOTO 180'JAGL
160 NEXT:FOR I=1 TO NO:IF LEFT$(W2$,
    3)=OB$(I,0)THEN W2=I:GOTO 180'KDTN
170 NEXT:PRINT"[SHFT I]
     DON'T KNOW "W2$:GOTO 70'DHYI
180 M=M+1:IF W1<10 THEN 1060'FMUI
190 IF W1>13 AND W1<17 AND W2=0 THEN
    PRINT CHR$(18)RN$(RM):GOSUB 870
    :GOTO 70'LECR
200 IF W1=18 THEN PRINT M"MOVES."
    :PRINT:GOTO 70'GJRD
210 IF W1<14 AND W1>9 THEN 760'FKSC
220 IF W1=19 OR W1=20 THEN 830'FLND
230 AM=0:IF(W1=15 OR W1=16)AND W2=2
    AND OB(2)=0 THEN AM=1'LBEM
240 IF AM=1 THEN A$="[SHFT U]
    IDSD!@SD!UISDD!CTUUNOR!UID!BNMNS!
    NG":GOSUB 1190'FKHP
250 IF AM=1 THEN A$="@!US@GGHB!MHFIU!
    HLCDEEDE!HO!UID!RHED/":GOSUB 1190
    :GOTO 70'GNNR
260 IF(W1=15 OR W1=16)AND W2=2 THEN
    PRINT"[SHFT D]ON'T HAVE IT!"
    :GOTO 70'JQQP
270 IF W1=17 AND W2=9 AND RM<>3 AND
    RM<>5 THEN PRINT"[SHFT D]
    ON'T NEED TO!":GOTO 70'NQPT
280 IF W1=17 AND W2=9 AND(OI=8 OR
    OI=RM)THEN PRINT"[SHFT D]
    ON'T NEED TO!":GOTO 70'LTTT
290 IF W1=17 AND W2=9 THEN OI=OI+RM
    :PRINT"[SHFT O,SHFT K]."
    :GOTO 70'JRIQ
300 IF W1=21 AND W2>9 AND W2<14 AND
    OB(2)>0 THEN PRINT"[SHFT Y]
    OU DON'T HAVE IT!":GOTO 70'LUIN
310 IF W1=21 AND W2=10 THEN PRINT"
    [SHFT Y]OU HAVE TO SPECIFY A
    COLOR.":GOTO 70'HLQM
320 IF W1=21 AND W2=11 THEN PRINT"
    [SHFT B]OOM!!!!":PRINT"[SHFT Y]
    OU MADE A MISTAKE!":GOTO 1400'IOHO
330 IF W1=21 AND W2=13 AND BU>0 THEN
    PRINT"[SHFT B]OOM!!!!"
    :PRINT"[SHFT O]OPS!"
    :GOTO 1400'KRHO
340 IF W1=21 AND W2=13 AND BU=0 THEN
    BU=1:PRINT"[SHFT C,SHFT L,SHFT I,
    SHFT C,SHFT K].":GOTO 70'KSNP
350 IF W1=21 AND W2=12 AND BU<>1 THEN
    PRINT"[SHFT B]OOM!!!!"
    :PRINT"[SHFT O]OOPS!"
    :GOTO 1400'LRKR
360 IF W1=21 AND W2=12 AND BU=1 THEN
    PRINT"[SHFT T]HE BOX OPENS AND
    [SHFT I] NOW HAVE A KEY."'ILLU
370 IF W1=21 AND W2=12 AND BU=1 THEN
    BU=2:OB(4)=0:GOTO 70'KYCQ
380 IF W1=22 AND W2=9 AND RM<>5 THEN
    PRINT"[SHFT C]AN'T DO THAT YET!"
    :GOTO 70'KNYT
390 IF W1=22 AND W2=9 AND RM=5 AND
    OB(4)=0 THEN PRINT"[SHFT O]K."
    :MP(5,2)=6:GOTO 70'MDCV
400 IF W1=22 AND W2=9 THEN PRINT"
    [SHFT C]AN'T DO THAT YET!"
    :GOTO 70'HKYJ
410 PRINT"[SHFT I] DON'T UNDERSTAND
    YOU.":M=M-1:GOTO 70'EHYJ
420 A$="[SHFT X]NT!@SD!HO!@!M@SFD!BNT
    SUX@SE!VHUI":GOSUB 1190'CHUM
430 A$="@!EHM@QHE@UDE!RIDE!HO!UID!BNS
    ODS/":GOSUB 1190'CHJM
440 A$="[SHFT U]ID!RNTUI!DEFD!HR!MHOD
    E!CX!@O!NME":GOSUB 1190'CHSN
450 A$="RUNOD!V@MM!VHUI!@!QNSUBTMMHR!
    HO!UID":GOSUB 1190'CHXP
455 A$="LHEEMD/":GOSUB 1190'CHQM
460 RETURN'BAQE
470 A$="[SHFT U]IDSD!HR!@!LNORUSNTR!F
    @UD!RDU!HO!UID":GOSUB 1190'CHRR
480 A$="ONSUI!V@MM/!![SHFT U]
    N!UID!RNTUI!HR!UID"
    :GOSUB 1190'CHSR
490 A$="BNTSUX@SE!@OE!UN!UID!D@RU!HR!
    @!RL@MM":GOSUB 1190'CHMT
495 A$="INTRD/":GOSUB 1190'CHTO
500 RETURN'BAQY
510 A$="[SHFT U]IHR!HR!UID!D@RU!BNTSU
    X@SE/![SHFT *]!RL@MM"
    :GOSUB 1190'CHON
520 A$="F@Q!DYHRUR!HO!UID!RNTUI!V@MM!
    NG!UID":GOSUB 1190'CHTN
530 A$="B@RUMD/!![SHFT *]
    !ENLHODDSHOF!UNVDS!RU@OER"
    :GOSUB 1190'CHJO
540 A$="RHMINTDUUDE!@F@HORU!UID!RJX-!
    UID":GOSUB 1190'CHWO
550 A$="DOUS@OBD!NG!VIHBI!HR!BNWDSDE!
    HO!WHODR/":GOSUB 1190:RETURN'DICR
560 A$="[SHFT X]NT!RU@OE!HO!@!RL@MM!F
    @Q!HO!UID!V@MM":GOSUB 1190'CHTR
570 A$="NG!VIHBI!UID!NOMX!DYHU!HR!ONS
    UI/":GOSUB 1190:RETURN'DINS
580 A$="[SHFT U]IHR!HR!UID!VDRU!BNTSU
    X@SE/![SHFT U]ID!RU@CMDR"
    :GOSUB 1190'CHTV
590 A$="@SD!UN!UID!RNTUI-!@OE!@!ENLHO
    DDSHOF":GOSUB 1190'CHHT
600 A$="UNVDS!RU@OER!RHMINTDUUDE!@F@H
    ORU!UID":GOSUB 1190'CHQM
610 A$="RJX-!UID!DOUS@OBD!NG!VIHBI!HR
    !BNWDSDE":GOSUB 1190'CHLN
615 A$="HO!WHODR/":GOSUB 1190'CHCL
620 RETURN'BAQC
```

```
630 A$="[SHFT X]NT!RU@OE!HO!UID!RU@CM
    DR-!VIHBI!I@WD":GOSUB 1190'CHCP
640 A$="@QQ@SDOUMX!ONU!CDDO!JDQU!WDSX
    !BMDDO/":GOSUB 1190:RETURN'DIGR
650 A$="[SHFT U]IDSD!@SD!W@SHNTR!UNNM
    R!@OE!NUIDS":GOSUB 1190'CHUR
660 A$="HUDLR!NG!ON!NS!RNLD!HOUDSDRU!
    HO!UID":GOSUB 1190'CHVS
670 A$="UNNM!RIDE/![SHFT U]
    ID!DOUS@OBD!HR!ONSUI/":GOSUB 1190
    :RETURN'DIDT
680 A$="[SHFT U]IHR!HR!UID!CNUUNL!GMN
    NS!NG!NOD!NG":GOSUB 1190'CHPU
690 A$="UID!L@OX!UNVDSR!HO!UIHR!B@RUM
    D/![SHFT *]O":GOSUB 1190'CHWV
700 A$="DYHU!HR!RNTUI!NG!IDSD/"
    :GOSUB 1190:RETURN'DIJK
710 A$="[SHFT U]ID!DOEMDRR!GMNNSR!@MM
    !@QQD@S!UID":GOSUB 1190
    :MP(RM,7)=0'DRVR
720 A$="R@LD!HO!UIHR!UNVDS/![SHFT T]
    Q!NS!ENVO>":GOSUB 1190:RETURN'DIJP
730 A$="[SHFT U]IHR!HR!@!RL@MM!FT@SE&
    R!RI@BJ/":GOSUB 1190'CHPO
740 A$="[SHFT W]@SHNTR!DWDSXE@X!HUDLR
    !@SD!NO!UID":GOSUB 1190'CHAR
750 A$="GMNNS/":GOSUB 1190:RETURN'DIPL
760 IF W2=0 THEN PRINT"[SHFT W,SHFT H,
    SHFT A,SHFT T]?":GOTO 70'FGPO
770 IF W2=14 THEN W2=7:W2$="MAGNET"'F
    LIP
780 FOR I=1 TO NO:IF LEFT$(W2$,
    3)=OB$(I,0)AND(RM=OB(I)OR(W1=12
    OR W1=13))THEN 810'NRUB
790 NEXT:IF W1=12 OR W1=13 THEN
    PRINT"[SHFT D]ON'T HAVE IT."
    :GOTO 70'IMDV
800 PRINT"[SHFT D]ON'T SEE IT."
    :GOTO 70'CDUH
810 IF W1=10 OR W1=11 THEN OB(I)=0
    :PRINT OB$(I,1)" IS TAKEN"
    :GOTO 70'IBLQ
820 OB(I)=RM:PRINT OB$(I,
    1)" IS DROPPED":GOTO 70'DTYN
830 PRINT"[SHFT Y]OU ARE CARRYING
    :"'BANK
840 AM=0:FOR I=1 TO NO:IF OB(I)=0
    THEN AM=1:PRINT OB$(I,1)'JCBS
850 NEXT:IF AM=0 THEN PRINT"[SHFT N,
    SHFT O,SHFT T,SHFT H,SHFT I,
    SHFT N,SHFT G]!"'FEGQ
860 GOTO 70'BCOI
870 ON RM GOSUB 420,470,510,560,580,
    630,650,680,710,730'CQAS
880 AM=0:FOR I=1 TO NO:IF RM=OB(I)AND
    AM=0 THEN AM=1:PRINT"[SHFT Y]
    OU SEE ";'LYOA
890 IF RM=OB(I)THEN PRINT OB$(I,1)",
    ";'EQWR
900 NEXT:IF AM>0 THEN PRINT"[LEFT2]
    ."'FEVI
910 RETURN'BAQE
920 PRINT"[SHFT I] DON'T UNDERSTAND
```

```
     YOU":M=M-1:GOTO 70'EHCP
 930 A$="[SHFT V]IHMRU!FNHOF!@CNTU!XNT
     S!CTRHODRR":GOSUB 1190'CHRS
 940 A$="@!LNSD!UI@O!RMHFIUMX!EDS@OFDE"
     :GOSUB 1190'CHOR
 950 A$="@QQ@SHUHNO!@QQD@SR/![SHFT I]
     D!RDDLR!UN!CD":GOSUB 1190'CHYU
 960 A$="RBSD@LHOF!RNLD!ONORDORD!@CNTU
     !ON":GOSUB 1190'CHNU
 970 A$="DRB@QD/![SHFT U]
     ID!FINRU!WDSX!HLQNMHUDMX"
     :GOSUB 1190'CHMW
 980 A$="M@TFIR!HO!XNTS!G@BD-!UIDO!W@O
     HRIDR!UN":GOSUB 1190'CHKX
 990 A$="VI@UDWDS!TORHFIUMX!QM@BD!ID!@
     QQD@SDE":GOSUB 1190'CHVY
 995 A$="GSNL/":GOSUB 1190'CHRV
1000 GOTO 80'BCPS
1010 A$="[SHFT X]NT!PTHUD!RTEEDOMX!@S
     D!HOUDSSTQUDE!CX":GOSUB 1190'CHJH
1020 A$="@O!NWDSQNVDSHOF!W@LQHSD/!
     [SHFT V]IHMD":GOSUB 1190'CHXG
1030 A$="RUSTFFMHOF!GNS!XNTS!MHGD!ID!
     B@MLMX":GOSUB 1190'CHRI
1040 A$="ESHOJR!XNTS!CMNNE/![SHFT X]
     NT!I@WD!EHDE/":GOSUB 1190'CHFJ
1050 GOTO 1400'BECY
1060 IF W1>6 AND W1<10 AND W2=7
     AND(RM=5 OR RM=3)AND(OI=RM OR
     OI=8)THEN RM=8:GOTO 1170'RKVS
1070 IF(W1<7 OR(W1>6 AND W1<10 AND
     W2=1))AND RM=2 AND OB(6)=0 AND
     OB(7)=0 THEN 1490'PLES
1080 IF W1<7 OR(W1>6 AND W1<10 AND
     W2<7)THEN 1120'JTSL
1090 IF W2=8 THEN RM=7:PRINT
     CHR$(18)RN$(RM):GOTO 1170'HXRL
1100 IF W1>6 AND W1<10 AND W2=7 THEN
     PRINT"[SHFT T]HE DOOR IS STUCK!"
     :GOTO 70'JNAI
1110 PRINT"[SHFT D]O WHAT?"
     :GOTO 70'CDLY
1120 IF W1<7 THEN W2=W1'EHCA
1130 IF RM=5 AND W2=2 AND MP(RM,
     W2)=0 THEN PRINT"[SHFT C]AN'T
     [SHFT T]HE DOOR'S LOCKED."
     :GOTO 70'JTEO
1140 IF RM=2 AND W2=1 AND(OB(6)>0 OR
     OB(7)>0)THEN 1470'JYMJ
1150 IF MP(RM,W2)=0 THEN PRINT"
     [SHFT S]OMETHING SOLID HITS YOU
     IN THE FACE.":GOTO 70'FNNP
1160 RM=MP(RM,W2):PRINT
     CHR$(18)RN$(RM)'DXEH
1170 IF MP(RM,7)=0 THEN MP(RM,7)=1
     :GOSUB 870:GOTO 70'GACK
1180 GOTO 70'BCOC
1190 FOR I=1 TO LEN(A$):A=-1'GJKI
1195 IF ASC(MID$(A$,I,1))/2=INT(ASC
     (MID$(A$,I,1))/2)THEN A=1'LBHU
1200 PRINT CHR$(ASC(MID$(A$,I,1))+A);
     :NEXT I:PRINT:RETURN'ISXD
1210 REM MAP'BDIW
1220 DATA 2,0,3,5,0,0'BLLY
1230 DATA 0,1,10,0,0,0'BMBA
1240 DATA 0,4,0,1,0,0'BLGB
1250 DATA 3,0,0,0,0,0'BLEC
1260 DATA 0,0,1,0,0,0'BLCD
1270 DATA 5,0,0,0,0,0'BLGE
1280 DATA 1,0,0,0,0,0'BLCF
1290 DATA 0,5,0,0,9,0'BLPG
1300 DATA 0,0,0,0,9,8'BLSX
1310 DATA 0,0,0,2,0,0'BLDY
1320 DATA N,S,E,W,U,D,GO,ENT,WAL'BWAE
1330 DATA TAK,GET,DRO,LEA,L,LOO,EXA,
     OIL,TIM,I,INV,PUS,UNL'BWJM
1340 DATA NOR,SOU,EAS,WES,UP,DOW,TOW,
     SHE,DOO,BUT,RED,YEL,GRE,ELE'BECP
1350 DATA "[SHFT C]OURTYARD","[SHFT B]
     Y THE GATES","[SHFT E]
     . COURTYARD","[SHFT G]
     AP IN WALL"'BDXQ
1360 DATA"[SHFT W]. COURTYARD","
     [SHFT S]TABLES","[SHFT T]
     OOL SHED"'BCCM
1365 DATA"[SHFT T]OWER","[SHFT T]
     OWER","[SHFT G]UARD
     QUARTERS"'BCHQ
1370 DATA CAN,"AN OIL CAN",7,BOX,
     "A BLACK BOX",10,SHO,
     "AN OLD SHOVEL",7'BVLR
1380 DATA KEY,"A KEY",11,GAR,
     "A GARLIC BLOOM",6'BOQM
1390 DATA BAT,"A CAR BATTERY",8,MAG,
     "AN ELECTROMAGNET",4'BNXQ
1400 PRINT:PRINT"[SHFT P]LAY AGAIN (
     [SHFT Y]/[SHFT N])":POKE 198,0
     :WAIT 198,1:GET A$'FQII
1410 IF A$<>"N"THEN RUN'FCLB
1420 PRINT"[SHFT B]ETTER LUCK NEXT
     TIME!":END'CBAG
1430 A$="[SHFT X]NT!PTHUD!RTEEDOMX!@S
     D!HOUDSSTQUDE!CX":GOSUB 1190'CHJN
1440 A$="@O!NWDSQNVDSHOF!W@LQHSD/!
     [SHFT I]D!U@JDR!NOD"
     :GOSUB 1190'CHUO
1450 A$="ROHGG!NG!XNTS!F@SMHB-!RUHBJR
     !TQ!IHR":GOSUB 1190'CHXO
1460 A$="ONRD!@OE!UIDO!GMHDR!@V@X/"
     :GOSUB 1190:RETURN'DIRN
1470 A$="[SHFT *]!FINRUMX!JOHFIU!HO!@
     !GTMM!RTHU!NG":GOSUB 1190'CHKQ
1480 A$="@SLNS!SDGTRDR!UN!MDU!XNT!Q@R
     R/":GOSUB 1190:GOTO 70'DKSR
1490 A$="[SHFT U]ID!FINRUMX!FT@SE!HR!
     @QQ@SDOUMX!RB@SDE"
     :GOSUB 1190'CHIT
1500 A$="NG!UID!L@FODU!@OE!SDGTRDR!UN
     !BNLD!OD@S":GOSUB 1190'CHHK
1510 A$="XNT/![SHFT X]NT!WDSX!B@RT@MM
     X!RUSNMM!NTU!NG":GOSUB 1190'CHLM
1520 A$="UID!B@RUMD/![SHFT B,SHFT N,
     SHFT O,SHFT F,SHFT S,SHFT *,
     SHFT U,SHFT T,SHFT M,SHFT *,
     SHFT U,SHFT H,SHFT N,SHFT O,
     SHFT R]!GSNL":GOSUB 1190'CHIT
1530 A$="[SHFT *]OUINOX![SHFT L]
     @SN-!QSNFS@LLDS/":GOSUB 1190
     :PRINT"[SHFT Y]OU TOOK"M"MOVES."
     :END'EKGS
```

END

by Mike and Linda Poltonavage

Boggling
for the Commodore 64 or 128

F*en?* Is that a word? Uh-oh, only 15 seconds. I have to find more words. *Plant!* That's good. That will score double.

Boggling is a computer game for the Commodore 64 or 128 similar to the board game Boggle. In case you haven't heard of it, I'll explain. There are sixteen cubes with letters on each of the faces. The computer "rolls" them, mixes them up, and displays the result as four rows of four letters each. The on-screen timer then gives you two minutes to write down as many words as you can find, subject to a few rules. The words have to be at least three letters long. They can't be proper names. You also can't use foreign words, unless they are commonly used such as *yen*. The letters must be adjacent, but they can go in any direction and can even change directions within the word. You can't wrap around the screen to make words, and you can't use the same cube twice. But you can use the same letter twice if it is on two cubes.

At the end of the two minutes the screen flashes on and off and a buzzer sounds (they should get your attention). You then compare lists with the other players. Any word that two or more players have gets crossed off the list of every player who has it. You get a point for each word you have left. Five-letter words score two points, six-letter words score three points, etc. Finding words with five or more letters is difficult. You can set a maximum number of rounds or a winning point total, and you can play with as many people as you want.



The computer version has a few advantages over the board game. While you are comparing lists, the computer is figuring out the next arrangement of cubes, so you don't have to wait between rounds. You don't have that noisy clatter as you shake up the box of cubes (which can get annoying or keep sleeping family members awake during late night games). You also don't have to worry about watching the time. The computer keeps track for you.

Hints

Here are a few hints we've found while getting trounced by our in-laws. Two minutes goes by quickly, so write FAST! Don't waste time searching for large words or searching in unpromising areas of the board. Large words are good, but the main object is volume. If you're not sure that a word exists, write it down and go on. If a check to *Webster's* later eliminates it, you haven't lost anything. Any time you see an "S," don't forget plurals. *Day* and *days* both count. Also try to check all combinations of letters. For example, if you find *ten* you also have *net*, and if you have *eat* you probably also have *ate* and *tea*.

Modifications

You can change the time allotted by changing the loops in line 115. Changing the loop for "M" from two-to-one to three-to-one will give you an extra minute (something I always wish I had). The mix of letters is not the same as the board game's. It is based partially on the frequencies letters occur and partially on what we found "worked" from trial and error. By changing lines 900 to 975 you can change the mix; the letters are simply represented by the numbers one to 26. As it is set now, there are 33 cube faces that have a vowel (not counting "Y") out of 96 faces. You are also currently guaranteed of getting either an "E" or an "I" and an "O" or an "U." The same vowel or consonant can also easily show up twice in one roll of the cubes, but that can be helpful.

Some space and typing was saved by designing the letters so that they share groups of character strings. Each letter is made up of five character strings five bytes long, and they often share some of the same strings. That did contribute to the complication in the print statement in line 310.

You can also play your own version of the game by making your own "house rules." For instance, you could count only words that the player can define. You could also penalize for guesses that don't turn out to be words. Another possibility is counting foreign words.

Boggling can be frustrating, enlightening, confusing and just plain fun. You might even increase your vocabulary and learn what *fen, rue* and *vie* mean.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Boggling

```
5 DIM X(26)'BFAE
10 DIM C(16,6),FP(16,3),S(26,5),
   A$(40)'BGED
15 S=54272:FOR I=S TO S+24:POKE I,0
   :NEXT'HRYK
20 POKE 53280,0:POKE 53281,0'CPLC
25 PRINT"[CLEAR]":PRINT"[DOWN]
   PLEASE WAIT WHILE I SET UP"'CBIM
30 FOR I=1 TO 16:FOR J=1 TO 6
   :READ C(I,J):NEXT:NEXT'JRGI
35 FOR A=1 TO 40:READ A$(A):NEXT'FLHJ
40 FOR I=1 TO 26:FOR J=1 TO 5
   :READ S(I,J):NEXT:NEXT'JRWJ
50 GOSUB 200:GOSUB 400'CHVD
100 PRINT"[CLEAR]":PRINT"[DOWN,RVS]
    PRESS ANY KEY TO DISPLAY CUBES
    [RVOFF]"'CBWF
105 GET A$:IF A$="" THEN 105'EIFE
110 PRINT"[CLEAR]":GOSUB 300'CEJX
115 FOR M=2 TO 1 STEP-1
    :FOR S=59 TO 0 STEP-1'KKVJ
120 PRINT"[HOME,DOWN13]";TAB(30);'CFUA
125 PRINT M-1;":";'CEOE
130 IF S<10 THEN PRINT" 0";CHR$(S+48)
    :GOTO 140'HNAF
135 PRINT S'BBKD
140 FOR Z=1 TO 650:NEXT'EGJC
```

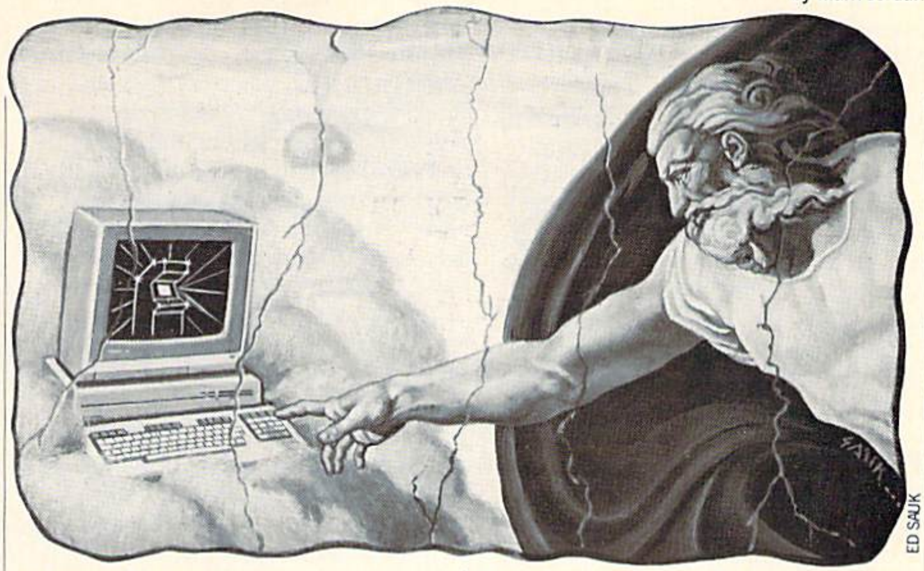
```
145 NEXT:NEXT'CBLF
146 S=54272:FOR I=S TO S+24:POKE I,0
    :NEXT'HRYN
147 POKE S+5,0:POKE S+6,128
    :POKE S+24,15'GSGN
148 POKE S+0,050:POKE S+1,4'ELCL
149 POKE S+4,33'CFOK
150 FOR J=1 TO 3:POKE 53265,11
    :FOR I=1 TO 150:NEXT'ITWI
151 POKE 53265,27:FOR I=1 TO 150:NEXT
    :NEXT J'GRUI
153 POKE 54296,0'BHCE
155 GOSUB 400:GOSUB 200'CHVH
160 PRINT"[HOME,DOWN5]";TAB(25);'CFTD
165 PRINT"[RVS]PRESS 'Y',"'BABJ
170 PRINT"[HOME,DOWN6]";TAB(25);'CFLE
175 PRINT"[RVS]TO PLAY AGAIN,"'BAQL
180 PRINT"[HOME,DOWN7]";TAB(25);'CFDF
185 PRINT"[RVS] 'Q' TO QUIT"'BACL
190 GET A$:IF A$="" THEN 190'EIJI
195 IF A$="Y" THEN PRINT"[CLEAR]"
    :GOTO 100'FGKO
197 PRINT"[CLEAR]":END'CBFM
199 REM  * ROLL CUBES *'BLQQ
200 FOR I=1 TO 16'DEIX
205 X=INT(RND(0)*6)+1'FIJG
210 FP(I,1)=X'BIAY
215 X=INT(RND(0)*16)+1'FJHH
220 FOR J=1 TO I-1'EESB
225 IF FP(J,2)=X THEN 215'DLXH
230 NEXT J'BBDY
235 FP(I,2)=X'BIBG
240 FP(I,3)=I'BIMC
245 NEXT I'BBCF
250 RETURN'BAQB
299 REM * DISPLAY CUBES *'BOGS
300 FOR I=1 TO 4:PRINT:X=(I-1)*4+1
    :FOR K=1 TO 5'LQRH
305 PRINT"[SPACE4]";:FOR J=X TO
    X+3'FGJH
310 PRINT A$(S(C(FP(J,3),FP(J,1)),K));
    " ";'BEVE
315 NEXT:PRINT'CBJE
320 NEXT:NEXT'CBLA
325 RETURN'BAQE
399 REM * SORT CUBES *'BLGS
400 FOR I=15 TO 1 STEP -1'FFJC
405 REM * PRINT MATRIX *'BNSH
410 FOR J=1 TO I'DDEB
415 IF FP(J,2)<=FP(J+1,
    2) THEN 435'FSSL
420 T1=FP(J,1):T2=FP(J,2)
    :T3=FP(J,3)'DEAI
425 FP(J,1)=FP(J+1,1):FP(J,2)=FP(J+1,
    2):FP(J,3)=FP(J+1,3)'GWQT
430 FP(J+1,1)=T1:FP(J+1,2)=T2
    :FP(J+1,3)=T3'GHOM
435 NEXT J'BBDG
440 NEXT I'BBCC
445 RETURN'BAQH
900 DATA 5,9,5,18,9,5'BMQF
905 DATA 9,10,4,20,25,16'BPRL
910 DATA 7,22,25,19,12,25'BQXH
915 DATA 1,23,1,11,24,1'BOFM
920 DATA 15,21,15,21,15,21'BRKI
925 DATA 5,11,2,5,14,5'BNVM
930 DATA 9,14,9,6,16,9'BNMJ
935 DATA 4,13,2,8,12,18'BOTO
940 DATA 26,13,3,8,19,18'BPEK
945 DATA 22,21,3,21,20,21'BQDP
950 DATA 14,1,13,1,12,1'BOEL
955 DATA 17,3,7,16,6,25'BOCQ
960 DATA 5,18,5,6,5,5'BMJL
965 DATA 4,20,2,7,14,20'BOLR
970 DATA 15,10,18,15,14,15'BRQN
975 DATA 20,11,8,4,19,13'BPRS
980 REM ****** 1-5'BJEN
985 DATA "[RVS,SHFT POUND,SPACE2,
    CMDR *,RVOFF]","[RVS] [RVOFF,
    SPACE2,RVS] [RVOFF]","[RVS,SPACE4,
    RVOFF]","[RVS,SPACE3,CMDR *,RVOFF]
    ","[RVS,SPACE3,RVOFF,SHFT POUND]
    "'BELB
990 REM ****** 6-13'BKGO
995 DATA "[RVS] [RVOFF,SPACE3]","
    [CMDR *,RVS,SPACE2,RVOFF,
    SHFT POUND]"," [RVS,CMDR K,RVOFF,
    CMDR K] ","[SPACE3,RVS] [RVOFF]",
    "[RVS] [RVOFF] [RVS,SHFT POUND,
    RVOFF,SHFT POUND]"'BERC
996 DATA "[RVS] [SHFT POUND,RVOFF,
    SHFT POUND] ","[RVS,SPACE2,RVOFF,
    SPACE2]","[RVS] [RVOFF,CMDR *,RVS,
    CMDR *,RVOFF] "'BCFA
1000 REM ****** 13-15'BLEU
1005 DATA "[RVS] [RVOFF] [CMDR *,RVS,
    CMDR *,RVOFF]","[RVS,CMDR *,
    RVOFF,SPACE2,RVS,SHFT POUND,
    RVOFF]"'BBNF
1010 REM ****** 16-20'BLDV
1015 DATA "[RVS] [CMDR *,SHFT POUND]
    [RVOFF]","[RVS] [RVOFF,CMDR *,
    SHFT POUND,RVS] [RVOFF]","[RVS,
    CMDR *,RVOFF,SPACE2,RVS] [RVOFF]
    ","[RVS] [CMDR *,RVOFF] [RVS]
    [RVOFF]","[RVS] [RVOFF,CMDR *,
    RVS,CMDR *] [RVOFF]"'BEUO
1020 REM ****** 21-25'BLEW
1025 DATA "[RVS] [RVOFF] [CMDR *,RVS]
     [RVOFF]","[RVS] [RVOFF,SPACE2,
    CMDR *]","[CMDR *,RVS] [RVOFF,
    SHFT POUND,RVS] [RVOFF]","
    [CMDR *,RVS,CMDR *,SHFT POUND,
    RVOFF,SHFT POUND]"," [CMDR *,
    SHFT POUND] "'BEGO
1030 REM ****** 26-30'BLFX
1035 DATA " [RVS,SPACE2,RVOFF] ","
    [RVS,SHFT POUND,RVOFF,SHFT POUND,
    CMDR *,RVS,CMDR *,RVOFF]","
    [SHFT POUND,SPACE2,CMDR *]","
    [RVS] [SHFT POUND,CMDR *] [RVOFF]
    ","[SPACE2,RVS,SHFT POUND,RVOFF,
    SHFT POUND]"'BEOO
1040 REM ****** 31-35'BLGY
1045 DATA " [RVS,SHFT POUND,RVOFF,
    SHFT POUND] ","[RVS,SHFT POUND,
    RVOFF,SHFT POUND,SPACE2]"," [RVS,
    CMDR F,CMDR D,RVOFF] ","[CMDR *,
```

Continued on page 128

by Mark Jordan

Creating an Arcade Game with BASIC 7.0

Explore the Commodore 128 in its powerful native mode. Some of the articles in this column may be technical, some not so technical —but we guarantee that they will spark your creativity.



ED SAUK

React to this statement: BASIC is for wimps, women and children. Now react to this statement: BASIC is a powerful high-level language suitable for commercial software development.

Okay, I admit, they are extreme statements, but it is only when we take an idea to its extreme that we can truly judge its worthiness. When I first got a Commodore 64 I would have agreed with the second statement. Then, as I tried to take BASIC to its extreme—I wanted to write a fast-moving arcade game as good as *Pac-Man*—I decided the first statement was true. So I learned machine language and concluded it was the only language capable of creating a computer game.

Well, all that was before two things happened: 1) BASIC 7.0 came along, and 2) compilers came out for it. Suddenly BASIC gained some muscle. I wrote a word processor in BASIC (with a few machine language subroutines) which, when compiled, was very fast. In fact, I am using it to write this article.

Sure, you say, a word processor, but can BASIC do the hard stuff like arcade games where speed is tantamount to everything else?

I left that question unresolved until now. Starting with this column, we will see if indeed BASIC 7.0, er, excuse me, *compiled* BASIC 7.0 is capable of creating an arcade game. And guess what game are we going to create? A *PacMan* clone. With improvements, naturally.

You will need a compiler to see the accompanying program, Frizzy, run at top speed. I recommend *Blitz! 128* simply because when I did a test run with Abacus' *BASIC 128 Compiler*, I discovered a couple problems with the SPRSAV statements. I will compare *Blitz!* with *BASIC 128 Compiler* in the third (and last) installment of this series and explain how to get around this problem.

You will also need to type Frizzy in. Use the Magazine Entry Program to help you. What you will have after you've typed in the first installment is the screen display, our main character (Frizzy), the scoring mechanism, and the ability to go all over the place eating friz fries (dots). The competitive elements—ghosts, bonus treats, lost lives—will come next issue.

Drafting the Code

Writing Frizzy presented several interesting challenges. First, I knew that the final product would be too long for a single magazine issue, so I had to plan carefully so that the user would have something at the end of the first session that he could play with as well as have all the proper receptacles in place for installment two to plug into.

Also, I had to try to keep the coding as efficient as possible so there would not be too much typing for you to do.

Another challenge was to make the game an accurate replica of its mother. No small challenge indeed.

Finally, I had to create code that would run at the proper speed once compiled. What you see happening when you run the uncompiled version is not necessarily what you'll see when you run it compiled.

To accomplish all of the above, I did what I rarely do when programming: I planned ahead. I have stated in previous columns that I am not a fan of structured programming, but in this case I knew it had to be done. So I created an outline just like a writer is supposed to do (but never does). Here's a simplified reproduction:

I. Setup
II. Main Loop
III. Finish up

Don't laugh. This simple little processing of thought at the beginning of my programming venture paid off big dividends later. Of course, each of these main points has a few sub-items. First, let's look at the Setup phase. Here's a more elaborate breakdown:

I. Setup
   A. Variables and other junk (lines 20-70)
   B. Sprites stuff (lines 75-92)
   C. Screen subroutine at 2800 (line 100)
   D. Dots subroutine at 3200 (line 110)
   E. Clever programming subroutine at 3600 (line 120)
   F. Two more lines of stuff (lines 130-140)

I won't say much about point A, the variables. I'll discuss the sprite info (point B) in the next installment of this series.

Point C's screen drawing subroutine uses BASIC 7.0's versatile BOX statement to create the display. If you want to change colors, fill in boxes, or touch up the display in any way, you'll need to study what's happening in line 2800-2990. A big help would be to watch the boxes being drawn. To do so, take out the FAST statement in line 20.

The Dots subroutine (D) draws the edible yellow dots that Frizzy will ingest. If you'd like to change the shape from simple boxes to circles or whatever, do it in line 3820. The placement of these dots (there are 256 of them) is determined in lines 3210-3260.

Getting Frizzy to move along the prescribed rows and columns without running through walls or outside of the boundaries was the toughest thing for me to program. I spent hours trying different routines which would efficiently do that.

In machine language, it wouldn't have been a big problem. But to do so in BASIC, even compiled BASIC, it had to be coded very carefully or the thing would've been way too sluggish. My ultimate solution is found partially in the "Clever Programming Subroutine" (point E) at 3600. An array—S(x,y)—does the job of telling us if Frizzy is allowed to move into the next spot on the grid or if a barrier is in his way. More on this in a later section.

Finally, point F simply does some important junk that I don't have space to discuss here.

The Main Loop

This is where it all happens. Understand it and you'll understand all. Here are the important subdivisions:

II. Main Loop
- A. Move Frizzy
- B. Move Ghosts
- C. Check for Collisions
- D. Display Bonus Treats
- E. Keep Score

The first thing the main loop does in line 500 is set up a variable—CC—which will cycle from 0 to 3 over and over again. Why? For speed. I decided that it wasn't necessary each time through the loop to calculate the score, flash lights on and off, offer bonuses, etc. So by using CC to control an ON/GOSUB statement in line 530, the main loop only accesses the subroutines for scoring, etc. once every four times through.

Line 510 is a crucial one. It sends us to the subroutine at 1000 which checks the joystick and moves Frizzy. This is the most CPU-consumptive phase of the operation, so the coding of it is crucial. Let's jump down to line 1000 and take a look.

The variable OJ means "old joystick value." We need to know what direction the joystick was the last time through the loop. J becomes our new value. JU means "junction" which will be set to 1 if Frizzy is at one of the junctions on the screen.

Line 110: IF J=0 THEN J=OJ simply says, if the joystick isn't being pressed, let's pretend it's still being pressed in the previous direction.

The subroutine called for at line 1020 (GOSUB 1200) checks to see if Frizzy is at a junction. JU=0 before we go to this subroutine. If upon returning, JU still equals 0, then we can rest assured that Frizzy is not at a junction.

What are these junctions? They are 8-pixel wide intersections on our screen. For example, when the program begins, Frizzy is on coordinates X=172 and Y=184 (see line 40). Since these are both divisible by 8, it's a junction point. If he would move two pixels to the left (X=170) he would no longer be on a junction point. Instead of checking every time to see if Frizzy can change directions, by using these junctions we check only every eight times. It's faster that way. And by using this technique we can be assured that Frizzy will only travel in straight lines on prescribed rows.

As you can see from line 1020, if we return from the subroutine and JU=0 then we're not at an intersection, so we jump down to 1110 to recalculate our XX and YY values (XX and YY are the x and y coordinates of Frizzy). The important thing to note here is that if we are not on an intersection, we will simply keep going exactly as we did the last time.

Line 1120 is the crucial line that moves Frizzy, MOVSPR1,XX,YY: You may wonder why I chose to use variables to move Frizzy instead of the convenient BASIC 7.0 relative values (like this: MOVSPR 1,+1,+0). The reason is, I needed to always know what coordinates Frizzy is on for calculations in other parts of the program, particularly the dot-eating subroutine. If you're an accomplished BASIC programmer, you may wonder why I didn't simply use RSPPOS to find out those coordinates whenever I needed them. Answer to that: it's slower.

You may have a third question: why didn't I use the MOVSPR commands that will send a sprite off and running without further tampering? The problem with these commands as well as BUMP and COLLISION is that they are just not precise enough. You may want to stop a sprite on an intersection but because of the variance between BASIC and the interrupt-driven routines that do these things, you'll be two, three pixels into the wall before the computer yells Crash! For some things, these are nice commands but for joystick-driven sprites, scratch them off your list.

Okay, back to line 1040, the place where we will go if Frizzy does happen to be on an intersection. Lines 1040 and 1050 set up some variables that'll be important later. For now, note that AJ=J, our joystick value.

Line 1060 takes AJ and uses what I consider the most efficient way to convert a joystick direction into action: the ON/GOSUB statement. Here's what it looks like:

ON AJ GOSUB 1300, 1360, 1310, 1360, 1320, 1360, 1330, 1360

If the joystick was pushed UP the value of AJ is 1. Therefore, line 1060 will shoot us down to a subroutine beginning on line 1300. Since we don't want to respond to diagonal joystick presses, if AJ equals 2, 4, 6 or 8, we do the same thing each time: jump to a RETURN (line 1360). You'll notice that a push to the RIGHT (AJ=3) sends us to line 1310, DOWN sends us to 1320, and LEFT to 1330.

Line 1300 causes Y2 to be a –1. This is because we pushed our joystick up and that negative 1 is going to be used to move Frizzy up the screen. Lines 1310-1330 do the same for the other directions setting either X2 or Y2 to 1 or –1.

Next we come to line 1340. Here X2 and Y2 are added to X and Y, respectively. But don't confuse X and Y with XX and YY. X and Y the result of dividing XX and YY by 8 (see line 1050). The purpose of doing this is to tell us where Frizzy is on the 8-pixel by 8-pixel grid. Remember what I told you in the "Clever Programming" section. The array, S(x,y) tells us at each junction if that slot allows Frizzy on it. If it's a wall, then S(x,y) will be equal to 0. If it isn't, then S(x,y) will equal 1 and Frizzy can go there.

Now we can see why we added X2 and Y2 to X and Y. It tells us the slot on the grid where Frizzy is heading. When we drop to line 1350 we can check if that slot is available for Frizzy. If it is, then S(x,y) will be true, and the rest of the line will execute. You will note that BA will be set to 1 if all this transpires.

In brief (Brief! Are you kidding?), we will exit from this subroutine with one of the following conditions: either BA=0 or BA=1. If it equals 1 we're in luck: we can move Frizzy (no boundary in our way). So we drop down to 1110 and recalculate where Frizzy should be and move him. If BA=0 we know that we are not allowed to move thataway so Frizzy must stop.

Ah, were programming so simple. Actually he isn't going to stop just yet. You see, all we know at this point is that the joystick was pushed in a direction that Frizzy cannot go. But if you've ever played *Pac-Man* you know that you often will push the joystick in the direction you intend to go as soon as you reach the next intersection. Therefore, we need to see if Frizzy can continue in the same direction, and we need to save the latest joystick value for when he reaches the next junction.

The IF/THEN BEGIN/BEND structure starting on line 1070 does all that. Study it to see how.

Phew! Double phew! Obviously, I cannot explain every nuance, every variable and every twist and turn of the code. But I

hope this explanation whets your interest in both Frizzy the Game and Frizzy the Concept. And what is Frizzy the Concept? It's just this: that you can produce fast, professional programs in BASIC with the aid of a compiler.

Of course, the program isn't quite finished. We still need the ghosts. Next time we'll put those poltergeists on Frizzy's tail. And we will analyze more code. Or maybe you can do them on your own before next time.

In installment #3 I'll give you some statistics on just how much faster compiling this program makes it run. And we'll look at the wonderful world of machine-language subroutines.

Is BASIC a sissy language? No way, muchacho. (Flex . . . Hold . . . Release).

Hasta luego.

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Frizzy

```
10 REM SETUP'BFGY
20 FAST'BBJY
30 DIM S(39,28),D(34,20),SU$(1,1)'BBJE
40 SPRITE 1,1,3:XX=172:YY=184
   :MOVSPR 1,XX,YY'ECOJ
50 Z$="000000":LC$=CHR$(14):TM=1'EOWI
60 EE(1)=7371:EE(2)=7404:EE(3)=7891
   :EE(4)=7924'EOBM
70 COLOR 0,1:COLOR 4,1:COLOR 1,7
   :GRAPHIC 1,1'EPDJ
75 FOR T=0 TO 63:POKE 3584+T,0:NEXT
   :FOR T=2 TO 8:SPRSAV 1,T:NEXT'LXJU
80 FOR I=0 TO 3:FOR T=21 TO 56:READ A$
   :POKE 3584+(I*64)+T,DEC(A$):NEXT
   :NEXT'OFET
90 SPRSAV 1,PM$:SU=1'CKVI
92 SPRSAV 1,A$:SU$(0,1)=A$:SPRSAV 2,A$
   :SU$(0,0)=A$:SPRSAV 3,A$
   :SU$(1,1)=A$:SPRSAV 4,A$
   :SU$(1,0)=A$'IRWB
100 GOSUB 2800:REM DRAW SCREEN'CPOA
110 GOSUB 3200:REM DRAW DOTS'CNFA
120 GOSUB 3600:REM SETUP
    JUNCTIONS'CTID
130 X1=-1:Y1=0:J=7:LI=2:R=0
    :FOR T=1 TO 4:DD(T)=EE(T)
    :NEXT'LIZN
140 COLOR 1,1:SLOW'CFKB
490 REM MAIN LOOP'BIMJ
500 DO:CC=(CC+1)AND 3'EJPD
510 GOSUB 1000:REM MOVE PACMAN'CPDE
520 GOSUB 1500:REM MOVE GHOST'COPF
530 ON CC+1 GOSUB 2000,2200,2600,
    2200'DWVI
540 REM         FLSH,COLL,CHRY,
    COLL'BTBI
550 IF R THEN EXIT'DBMG
560 LOOP'BAKF
580 IF LI THEN GOSUB 3400:R=0
    :GOTO 130'FNXM
590 END'BACI
990 REM MOVE MAN'BHLO
1000 OJ=J:J=JOY(2):JU=0'EMPX
1010 IF J=0 THEN J=OJ'EFRW
1020 GOSUB 1200:IF JU=0 THEN 1110'EMAA
1030 REM CHECK IF BARRIER FOR NEXT
     MOVE'BAXD
1040 AJ=J:BA=0'CHMA
1050 X=XX/8:Y=YY/8:X2=0:Y2=0'GRYG
1060 ON AJ GOSUB 1300,1360,1310,1360,
     1320,1360,1330,1360'CQBI
1070 IF BA=0 THEN BEGIN'EEWD
1080 IF AJ<>BJ THEN AJ=BJ
     :GOTO 1050'GNEH
1090 GOTO 1130'BECD
1100 BEND'BBXU
1110 XX=XX+X1:YY=YY+Y1'ENAB
1120 MOVSPR 1,XX,YY'BINX
1130 RETURN'BAQW
1190 REM JUNCTION CHECK'BNLH
1200 IF XX AND 7 THEN RETURN'EDKX
1210 IF YY AND 7 THEN RETURN'EDMY
1220 JU=1:RETURN'CEXY
1290 REM BARRIER CHECK'BMSH
1300 Y2=-1:GOTO 1340'DINY
1310 X2=1:GOTO 1340'CIWY
1320 Y2=1:GOTO 1340'CIXA
1330 X2=-1'CDYB
1340 X=X+X2:Y=Y+Y2'EJEF
1350 IF S(X,Y)THEN X1=X2*2:Y1=Y2*2
     :BJ=AJ:BA=1:IF X2 THEN SV=X2
     :IF SV=-1 THEN SV=0'QPYV
1360 RETURN'BAQC
1490 REM MOVE GHOSTS'BKHJ
1500 RETURN'BAQX
1990 REM FLASHDOTS'BJEO
2000 TM=XOR(TM,10)'CKRW
2010 FOR T=1 TO 4:POKE DD(T),TM
     :NEXT'FNXB
2020 SU=XOR(SU,1):A$=SU$(SV,SU)
     :SPRSAV A$,1'EDDF
2030 RETURN'BAQW
2190 REM COLLISIONS'BKQH
2200 PP=7168+INT((XX-14)/8)+INT(
     (YY-35)/8)*40'KBLI
2210 GR=PEEK(PP)'CGDY
2220 IF GR=112 THEN POKE PP,0:PO=PO+10
     :P=P+1:SOUND 1,30000,2
     :GOTO 2400'KKNM
2230 IF GR AND 15 THEN BEGIN'EFUC
2240 FOR T=1 TO 4'DDSC
2250 IF DD(T)=PP THEN DD(T)=252'EPPH
2260 NEXT'BAEC
2270 POKE PP,0:PO=PO+100
     :SOUND 1,5000,10'EWLK
2280 GOTO 2400'BEDF
2290 BEND'BBXG
2300 RETURN'BAQW
2390 REM SCORE'BFLI
2400 IF P=256 THEN R=1'EGGC
2410 REM IFGHOSTTHENR=1:LIFE=LI-1'BYCG
2420 COLOR 1,2:CHAR 1,4,1,
     RIGHT$(Z$+MID$(STR$(PO),2),
     6)'GYWJ
2430 RETURN'BAQB
2590 REM CHERRIES'BICK
2600 RETURN'BAQA
2790 REM DRAW SCREEN'BKYN
2800 COLOR 0,1:COLOR 4,1
```

```
     :COLOR 1,7'DLSG
2810 GRAPHIC 1,1:WIDTH 2'CGQF
2820 BOX 1,15,17,305,188
     :BOX 1,19,20,301,185'CGTL
2830 BOX 1,157,20,163,44'BPTI
2840 BOX 1,117,57,203,60
     :BOX 1,157,60,163,76'CGYN
2850 BOX 1,117,89,203,108
     :BOX 1,125,92,195,105'CIUP
2860 BOX 1,117,121,203,124
     :BOX 1,157,124,163,140'CKVQ
2870 BOX 1,117,153,203,156
     :BOX 1,157,156,163,172'CKQR
2880 FOR T=1 TO 16:READ X,Y,X1,Y1'EODP
2890 BOX 1,X,Y,X1,Y1:BOX 1,320-X,Y,
     320-X1,Y1'EEWU
2900 NEXT'BAED
2920 COLOR 1,4:BOX 1,145,89,173,
     92'CTHK
2930 FOR T=1 TO 3:READ X,Y,X1,Y1'ENBL
2940 BOX 0,X,Y,X1,Y1:BOX 0,320-X,Y,
     320-X1,Y1'EEUQ
2950 NEXT'BAEI
2960 COLOR 1,5:CHAR 1,3,0,LC$+"
     [SHFT P]LAYER 1[SPACE4,SHFT H]
     IGH [SHFT S]CORE[SPACE4,SHFT P]
     LAYER 2"'DNYY
2970 CHAR 1,3,5,"[SHFT Q]",1
     :CHAR 1,36,5,"[SHFT Q]",1'CSYQ
2980 CHAR 1,3,18,"[SHFT Q]",1
     :CHAR 1,36,18,"[SHFT Q]",1'CUWS
2990 RETURN'BAQM
3190 REM DRAW DOTS'BIVH
3200 COLOR 1,8'BDXX
3210 FOR T=1 TO 34:D(T,1)=1:D(T,4)=1
     :D(T,6)=1:D(T,14)=1:D(T,16)=1
     :D(T,20)=1:NEXT'KGPQ
3220 RESTORE 5370'BEPA
3230 FOR T=1 TO 32:READ X,Y:D(X,Y)=1
     :NEXT'GRTH
3240 FOR T=1 TO 20:READ X,Y:D(X,Y)=0
     :NEXT'GRPI
3250 FOR T=7 TO 13:D(7,T)=1:D(28,T)=1
     :NEXT'GWJK
3260 FOR T=1 TO 34:D(T,18)=D(T,6)
     :NEXT'FTBK
3270 FOR I=1 TO 20:FOR T=1 TO 34'GJAJ
3280 IF D(T,I)>0 THEN BOX 1,19+T*8,
     18+I*8,21+T*8,19+I*8'MDST
3290 NEXT:NEXT'CBLH
3300 RETURN'BAQX
3390 REM DOT COLOR RESET'BNTL
3400 FAST:P=0:COLOR 1,8'DISD
3410 FOR I=1 TO 20:FOR T=1 TO 34'GJAF
3420 IF D(T,I)THEN DRAW 1,19+T*8,
     18+I*8'HRMJ
3430 NEXT:NEXT'CBLD
3440 SPRITE 1,1,3:XX=172:YY=184
     :MOVSPR 1,XX,YY'ECOM
3450 COLOR 1,1'BDQF
3460 SLOW'BBKG
3470 RETURN'BAQG
3590 REM DOWN JUNCTIONS'BNGN
3600 FOR I=1 TO 10:READ Y'EGDE
3610 DO:READ X,Z:X=X-1:Z=Z-1
     :IF X=-1 THEN EXIT'LPNN
3620 FOR T=X TO Z:S(T,Y)=1:NEXT'FMAJ
3630 LOOP'BAKE
3640 NEXT'BAEF
3660 REM ACROSS JUNCTIONS'BPXM
3670 FOR I=1 TO 5:READ X'EFIL
3680 DO:READ Y,Z:Y=Y-1:IF Y=-1 THEN
     EXIT'JLSS
3690 FOR T=Y TO Z-1:S(X,T)=1
     :S(43-X,T)=1:NEXT'IXKU
3700 LOOP'BAKC
3710 NEXT'BAED
3720 RETURN'BAQE
4990 REM SPRITE DATA'BKCR
5000 DATA 00,19,60'BILY
5010 DATA 00,6A,D8,00,97,68,00,1F'BXFD
5020 DATA D0,00,35,B8,00,1F,E8,00'BXHE
5030 DATA FF,F0,07,FF,E0,07,E3,D0'BXPF
5040 DATA 00,1F,60,00,00,F0,00,01,
     F8'BBXG
5060 DATA 00,0C,90'BIXF
5070 DATA 00,0A,A8,00,1F,D0,07,FB'BXIJ
5080 DATA E0,00,7E,D8,00,07,F0,00'BXHK
5090 DATA 07,C8,00,07,E0,00,07,D8'BXYL
5100 DATA 00,0F,60,07,FC,F0,00,01,
     F8'BBUD
5120 DATA 01,A6,00'BITC
5130 DATA 06,D5,80,05,BA,40,02,FE'BXEG
5140 DATA 00,07,6B,00,05,FE,00,03'BXJH
5150 DATA FF,C0,01,FF,F8,02,F1,F8'BXTI
5160 DATA 01,BE,00,03,C0,00,07,E0,
     'BYKJ
5180 DATA 02,4C,00'BIUI
5190 DATA 05,54,00,02,FE,00,01,F7'BXQM
5200 DATA F8,06,DF,80,03,F8,00,04'BXYE
5210 DATA F8,00,01,F8,00,06,F8,00'BXYF
5220 DATA 01,BC,00,03,CF,F8,07,E0,
     'BYKG
5240 REM BOX DATA'BHUF
5250 DATA 37,33,67,44, 37,57,67,
     60'BXFJ
5260 DATA 15,73,67,92, 15,76,63,
     89'BXMK
5270 DATA 15,105,67,124, 15,108,63,
     121'BCDL
5280 DATA 37,137,67,140, 61,140,67,
     156'BCTM
5290 DATA 19,153,43,156'BNNL
5300 DATA 37,169,139,172, 85,153,99,
     169'BDQG
5310 DATA 85,105,99,124'BNTE
5320 DATA 85,57,99,92, 99,73,139,
     76'BYHH
5330 DATA 85,137,139,140, 85,33,139,
     44'BCAI
5340 DATA 15,93,19,104, 15,77,19,88,
      15,109,19,120'BNBL
5360 REM DOT DATA'BHSI
5370 DATA 1,2,7,2,16,2,19,2,28,2,34,
     2'BCGM
5380 DATA 7,3,16,3,19,3,28,3'BSTL
5390 DATA 1,5,7,5,11,5,24,5,28,5,34,
     5'BCPO
```

```
5400 DATA 1,15,7,15,16,15,19,15,28,15,
     34,15'BIMH
5410 DATA 4,17,7,17,11,17,24,17,28,17,
     31,17'BIPI
5420 DATA 1,19,16,19,19,19,34,19'BWYH
5430 DATA 8,6,9,6,10,6,17,6,18,6,25,6,
     26,6,27,6'BMLL
5440 DATA 1,16,2,16,5,16,6,16,29,16,
     30,16,33,16,34,16'BSIN
5450 DATA 17,14,18,14'BLLI
5460 DATA 17,1,18,1'BJHJ
5480 REM DOWN JUNCTION DATA'BQYO
5490 DATA  8, 6,21,24,39,,'BOUN
5500 DATA 11, 6,39,,'BJEE
5510 DATA 13, 6,12,16,21,24,29,33,39,,
     'BCOI
5520 DATA 15, 16,29,,'BKGG
5530 DATA 17, 6,16,29,39,,'BPCI
5540 DATA 19, 16,29,,'BKKI
5550 DATA 21, 6,21,24,39,,'BPNK
5560 DATA 23, 6,9,12,33,36,39,,'BUJM
5570 DATA 25, 6,12,16,21,24,29,33,39,,
     'BCRO
5580 DATA 27, 6,39,,'BJLM
5600 REM ACROSS JUNCTION DATA'BSVI
5610 DATA 5, 9,14,22,24,26,28,,'BUGI
5620 DATA 8, 24,26,,'BJGH
5630 DATA 11, 9,26,,'BJDI
5640 DATA 15, 12,14,16,22,24,26,,'BWTL
5650 DATA 20, 9,12,14,16,22,24,26,28,,
     'BCKN
```

END

Projects/Synchronicity

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Listing

```
mmenu:
CLS:LOCATE 7,25
PRINT  "Menu"
PRINT " 1) Set EEG Frequency "
PRINT " 2) Set Time"
PRINT " 3) Run"
PRINT " 4) Quit"
PRINT:PRINT "Enter Selection (1-4)"
INPUT a
  ON a GOTO EEG,ptime,start,pEND
EEG:
CLS:LOCATE 7,30
PRINT  " EEG Menu" : PRINT
PRINT "1)  Delta "
PRINT "2)  Theta"
PRINT "3)  Alpha"
PRINT "4)  Beta"
 PRINT :PRINT "Enter Choice (1-4)"
  INPUT a
    IF a=1 THEN b=3
    IF a=2 THEN b=6
    IF a=3 THEN b=9
    IF a=4 THEN b=12
  IF a<1 OR a>4 THEN EEG
  GOTO mmenu
ptime:
  CLS:LOCATE 7,30: PRINT "Set Time Elapse": PRINT
  PRINT "Enter number of minutes program to run."
  INPUT t : IF t<0 THEN ptime
  GOTO mmenu
start:
CLS:LOCATE 7,7:
PRINT " At this point you may shrink this window"
PRINT "using the gadget in the lower right hand corner"
PRINT "and open another window. Or use the back gadget "
PRINT "in the upper right to get back to an opened window"
 IF b=0 THEN b=9 :REM default to alpha
 st = t*100
 stimer = TIMER + st
     WHILE TIMER < stimer
 sdl=638.25: REM 1st note value
 SOUND sdl,30,255,2: SOUND sdl+b,30,255,3
     WEND
GOTO mmenu
pEND:
CLS:END
```

END

Continued from page 14

Fist II: You have probably heard a soft beep while playing this game. I found out that if you hear it, it means you are going the right way to finding the Warlord.
Steve Wahr
Marietta, GA

Flight Simulator II: If *Simulator* tries to access the disk drive as you are changing disks or when you have the drive turned off, the program locks up. You can get out of this situation by inserting the main disk or a scenery disk, then closing the door on the drive. Turn the drive off and on until you get a message screen, then follow the prompt. You'll be back in Flight mode on your correct heading and course.
Paul Kelley
Greensburg, PA

Frantic Freddie: On the first level, push up when the game begins. This will put you on the second floor without the aid of a ladder.
Jamie & Scott Jones
Trafford, PA

GBA Basketball Two-on-Two: To block every shot the computer takes, position yourself under the basket and jump up for a rebound when the ball is about to hit the rim. You will actually "steal" the ball before it goes in. This will work all the time if you time it right.
Matt Cusack
Chester, NJ

The Hobbit: To escape the Goblin's Dungeon, you need to have Thorin or Gandalf in there with you. Now say to Thorin or Gandalf: Carry Me, then Open Window, then West.

What you do to escape the Elven Dungeon and Wine Cellar depends on what and whom you have with you. To get out of the Dungeon, wait until the Butler opens the door. Get out right away or he'll close it again.

It's tougher to get out of the wine cellar. If the Butler's alive and you're wearing the Ring, wait until he throws a barrel through the trapdoor, then jump onto the barrel.

If Thorin is with you or you don't have the Ring, you first have to kill the butler and open the trapdoor. Then you have to say to Thorin: Carry Barrel, Throw Barrel Thru Trapdoor, Jump Onto Barrel. Then you can throw your own barrel through the trap door and jump onto it.
Kevin Walsh
Hopkinton, MA

Infiltrator: If the enemy aircraft passes your own craft on the left, it is almost guaranteed that the enemy will be your friend. If it passes on the right, it will be an Overlord.
Scott Croughwell
Simi Valley, CA

Jeopardy: If you have a wealthy champion saved to the disk, make a back-up copy of the front side of the disk. If you have a bad game and lose your championship, you won't lose everything and have to start over from scratch.
Jason McFarland
Richmond, IN

Karateka: During the game you may be encountering more men than you have to. For example, when walking outside the building, you will usually meet six men. If you run, you meet only three! Conclusion: run as much as possible.
Doug Cross
Sellersburg, IN

The Last Ninja: To get past the Dragon throw the smoke bomb right under him. With practice you'll hit and he'll cripple down.
Michael Epstein
Stony Brook, NY

Mail Order Monsters: For a Morph that can destroy Morphs at intermediate level, select a Lyonbear with these traits: Armor-4, Strength-4, Speed-7, Life-130, Mind-$. These traits will cost 360 Pychons. Then get a Grenade with 100 Rounds, which will cost 160 Psychons.
Tony Heyden
Address Unknown

Maniac Mansion: In Weird Ed's room, there are a couple of helpful things that can be done. First, Weird Ed hid his father's Card Key under his beloved Hamster. You have to pick up the Hamster to get it though. Second, if you open the Piggy Bank you can get at Weird Ed's dimes. Make sure Weird Ed is not in the room when you do either of these!
Aaron Maupin
Fresno, OH

Maniac Mansion: To get out of the Dungeon without the Rusty Key, push the loose brick under the left barred window. Be sure to have someone by the door ready to run out. It is easier to do this if you use the F1, F2 and F3 keys to switch between kids.
Aaron Maupin
Fresno, OH

NBA Basketball: Need a good shooting and aggressive team? Choose the 1965-66 Philadelphia '76ers and substitute Chamberlain for every position. With Chamberlain at every spot, you're sure to win.
Doug Hala
Toledo, IA

Racing Destruction Set: To beat the computer during a destruction match, go to the options menu and modify the computer's car. Give him fewer oil slicks, land mines, etc.
Scott Jones
Trafford, PA

Rambo: Do this only on a backup. Load the program, but before typing RUN, type the following:

POKE 6099,173 By doing that, Rambo will never lose any energy. (Note: you won't be able to restart the game unless you turn off the computer and reload.)
David Truong
Falls Church, VA

Seven Cities of Gold: Remember that food is bought and bartered in relation the the number of men in your party. Decide on the number of men you want first, then how many weeks food you want.

Don't underestimate native communications. Some towns can spread word of your activities to cities you haven't yet visited.
Steven Gabaris
Flushing, NY

Skyfox II: A way to find out where you are in the game (in case you are lost!) is to, first type "L" to display your grid coordinates. Then type "O" to show the overview map. Move the cursor so that the coordinates on the map each match up to the first two digits of the coordinates at the bottom of the screen, and presto! the cursor on the map will show your position in space!
George Mantis
West Hempstead, NY

Space Harrier: When the flying dragon appears at the end of the first stage, keep firing at its head. Don't worry about getting killed. Since time stops when you get killed, you can make it to the next stage with about five seconds of time. After that you have all your lives.
Juan Rodriguez
Abington, PA

Tag Team Wrestling: To beat the computer in less than a minute, either dropkick to outside of ring, then give back-to-back drops until 18 seconds, then get in the ring to get computer counted out; or in the ring, neck hang the computer many times until he gives up. These methods have taken me to round 37, Super Champ and beyond.
Tony Heydon
Address Unknown

TNK III: Find an "L" as soon as possible. When you have one, creep slowly forward and watch for men or tanks. Ease into alignment with them where they are half on screen, half off. Here you can destroy them before they can shoot you. Approach bunkers off center to avoid their shots. If you're low on energy (or you're chicken), go as far downward as possible when you spot a threat. It will mysteriously have vanished! Ram the rail gun if you didn't get an "L." It's hopeless otherwise.
Matt Mclain
Walterboro, SC

Tass Times in Tone Town: When you get to the gate guarded by the nose and eye creatures, you must throw a mushroom (not pictured on the screen) at the eye to get through the gate.
Doug Cross
Sellersburg, IN

Ultima IV: To find the sextant go to the Village of Vesper (or Buccaneers Den at J'O I'T'), go to the gild and ask for item "D" (which won't appear on the list of items). The thief will inform you that he has one more sextant, and will sell it to you for 900 gold pieces (better sharpen that sword and mend that bow)! The sextant is well worth the price.
Andrew Zeitoun
Scarsborough, Ontario
Canada

Winter Games: If you have Track/Sector Editor you can change the name of the countries by going to Track 16, Sectors 13, 15, and 17. To change the world records you have to go to Track 18, Sector 13.

I recommend making these changes on a back-up copy of your disk to avoid damage to the game.
Juan Daniel Reich
Santiago, Chile

Wizard: On the first screen of the expert level, get a key and eliminate all the snowballs. Then climb up one of the farthest ladders on the outside; line up the middle of your body with the treasure that is sitting on the ledge surrounded with skulls. Shoot a magic missile, which will kill the snowball by the treasure (you can't see it because it is black).

Go to the center ladders and jump toward the treasure. Your score will keep increasing and won't stop until you move. I once had over ten thousand wizards.
Adrian Ali
Bradford, Ontario
Canada

Wizard's Crown: Having trouble finding that special weapon or armor? Try this: In the second zone on the west side of the old city there is a small patch of woods populated by some very mean white rabbits. This woodland is called the field of bones. After defeating the rabbits, save the game and exit camp. Searching the area will now turn up a number of items.

If you don't see what you are looking for, reboot and search again. Keep doing this until you find what you need. Note: Several monster types in this game have a special weakness. The rabbits' is magic weapons.
James Jackson
Chicago, IL

World Games: In Barrel Jumping, it's best to obtain speed as quickly as possible. To do this, I move left and right as fast as I can. When I get to the flag marker, I press the fire button and move the joystick to the upper-right-hand position.

It's better to start jumping after the flag than before or right at it. I tried this method and jumped 18 barrels.
Eric Chan
Dallas, TX

World Karate Championship: Here's how to beat the computer. Face to the left, (white player). When the computer approaches, flip over him. Finish him off. Watch out for his low kick and high punch.
Omar Salinas
Address Unknown

Yie Ar Kung-Fu: To easily get by the first three enemies, continually hold the button down and the joystick up. This will activate the flying kick and defeat Buchu, Star and Nuncha. It may also earn you an extra life or two.
Doug Hala
Toledo, IA

Zork II: To get the key to open the door in the Tiny Room, put the mat under the door and push the letter opener into the lock. This will make the key fall out of the other side of the lock onto the mat. Just pull the mat out from under the door, and you will have the key.
Jeff T. Henson
Mayflower, AZ

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The people at Progressive Peripherals & Software said not so. It is their opinion (and after comparing the two programs I agree), that *DiskMaster* is a superior utility program which will appeal to one group of Amiga users while *CLImate* will appeal to another.

As you would expect, both programs have many identical file manipulating features like: copy, move, delete, read, print, rename, show .IFF file, etc. But *DiskMaster* doesn't stop there. The program opens with an impressive 21-option tool box as well as dual work windows and two pull-down menus. And the program automatically adjusts to support whatever devices you have attached to your system (floppy or hard disk drives and RAM:) up to a total of six. But if that isn't enough, you can define and add six other devices (giving a total of 12).

The program also includes what appears to be a single command gadget, but when this gadget is selected with the right mouse button, it reveals a total of six user-definable commands. Using this option you can install your most often used C: directory commands, like RUN, EXECUTE, ED, etc. This flexible program design means each user can customize *DiskMaster* to respond according to his or her personal needs, and not just to those envisioned by the program's creator.

Because many of *DiskMaster*'s features are programmable (although many users will like it just as it comes from the box), changes must be saved to disk. If you install *DiskMaster* on another disk (Workbench or your hard drive's system disk), the program will save and use this information in a small configuration file. The advantage of this arrangement is that the program does not have to conform to your system's Preferences settings. For instance, I use *DiskMaster* with a black, hi-res screen and tiny characters, so I can view and operate on more files without having to scroll the screen. But my normal Workbench screen uses the default topaz font and 80 columns. The ability to use tiny characters and a hi-res screen allows me to view up to 70 files (perfect for hard drive users) and show information including the file's name, size, creation date, protection settings and comments.

If you own a version of the public domain ARC and UNARC programs (used primarily for packing and unpacking several files for quick transmission via telecommunication software), *DiskMaster* includes options to let you install it in your C: directory and then ARC and extract files by simply highlighting them and selecting the proper option from a pull-down menu.

The program is ready for both 1.3 and 1.4 versions of Amiga DOS which will implement the full array of file protection schemes including "A"rchive, "R"ead, "W"rite, "E"xecute and "D"elete. To take advantage of this feature you simple toggle the protection flag on a file on or off, by first highlighting the file and then clicking on the protect gadget. To reverse the procedure just select and adjust the protection pattern (simply point and click), highlight the file again and click on the "protect" gadget again.

Other than allowing you to manage files, *DiskMaster* also lets you examine them. The program's routine for letting you view a file is the most powerful I've seen (including *WordPerfect*'s own LOOK command). It lets you not only view the file, but also scroll through it (in any direction) by simply pressing the mouse in any direction. This means you don't have to start over if the section of the file you want to see scrolls out of view. The program includes flexible print commands too.

Graphic collectors will love the program's powerful IFF file viewing options. First, to view a file all you need do is highlight the file (you may select a whole disk at a time if you wish) and then click on the "ShowPic" gadget. The image will remain until you click the mouse again. If you selected more than one file to view, the next one will automatically load and appear. This feature would be perfect for showing user group art galleries as well as slide shows for business presentations. And if that weren't enough, you can press the "P" key while an image is displayed, and the program will dump it to your printer.

One last note—a musical one. *DiskMaster* will play back most sound files. So (just like collectors of graphics) music lovers can have the program select a menu full of sound files and then play each in sequence, turning an Amiga into a stereo sound machine.

Conclusion

I depended on *CLImate* for a year before *DiskMaster* was released, and during that year was never disappointed with its power or controls. I considered it the perfect workmate for my disk/file handling needs. And although I have now replaced it with *DiskMaster*, I still consider it an excellent DOS utility.

I couldn't imagine facing my DOS chores without the assistance of one or the other of these. I find myself examining, moving, duplicating, deleting or printing some sort of file almost hourly (between two floppy and two hard disks drives). I never realized how dependent I had become upon *CLImate*'s help until a two-week period when I was forced (because of a change in work locations) to work without it. After growing so dependent upon it, I never imagined parting with it. But *DiskMaster* changed my mind. During the year since I installed *CLImate,* both my needs and knowledge of the Amiga's filing system have increased. I have become less dependent upon Workbench's protective shell and like to dig deeper into file structure.

So for my present needs, *DiskMaster* is better. One impressive feature I like is the ability to define, store and issue the specific DOS commands I use most often. And unlike *CLImate,* it also lets me define the screen's display colors, font size and screen resolution (independent of those set in Preferences), so more files and information can be compared at a glance. I also like *DiskMaster*'s flexible printout options better than *CLImate*'s.

I see *CLImate* as the logical DOS utility choice for the first time or casual user and *DiskMaster* as the choice for the power user. *CLImate*'s intuitive design makes it so easy to use I never had to open the manual to master it. But because *DiskMaster* can be customized to suit individual needs it is a little more complicated and will require some reading and experimentation to master. If *DiskMaster* had not come along, I'm sure I would have gone merrily along with *CLImate* for years. But now I use *DiskMaster* almost exclusively, although I keep a copy of both on my hard drive.

Which is better for you depends entirely upon how deep you want to dig into your disk files. It is always nice to have a choice (even if it may be difficult to decide), but what makes this choice unusual is that both programs come from the same company, Progressive Peripherals and Software. Apparently they too think different users will be attracted to the two programs for different reasons.

In short, there may be Workbench/CLI utility bridges on the market which are better than these two, but I haven't seen them. And regardless which one you choose for yourself, you will appreciate the power it enables and the program's logic and intuitive design. ■

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Let It Snow: In keeping with our seasonal theme, here's a program that combines screen animation and a lively version of a popular winter song. In 128 mode, the animation kind of breaks down; maybe you can figure how to fix it.
Joseph R. Charnetski
Plains, PA

```
100 PRINT"[CLEAR,RVS,SPACE3]
    LET IT SNOW - JOSEPH R.
    CHARNETSKI[SPACE3]":IF CS THEN END
110 FOR J=1 TO 118:READ K:CS=CS+K:NEXT
120 RESTORE:IF CS<>3089 THEN
    PRINT"ERROR IN DATA STATEMENTS!"
    :STOP
130 S=54272:FOR V=S TO S+23:POKE V,0
    :NEXT
140 POKE S+5,9:POKE S+6,9:POKE V,15
    :POKE 53281,0
150 PRINT CHR$(147);CHR$(5)
160 FOR I=1 TO 136:READ N,D:POKE S+1,N
    :R=1:IF (I=34) OR (I=102) THEN
    RESTORE
170 POKE S+4,21:FOR J=R TO D*9
    :IF J-R THEN 200
180 PRINT CHR$(19);TAB(39);CHR$(148);
    CHR$(32);SPC(RND(.)*38+1);CHR$(46)
190 POKE 218,156:R=R+11
200 NEXT:POKE S+4,20:NEXT:POKE V,0:
210 GOTO 100
220 DATA 33,2,33,1,67,2,67,1,59,2,56,
    2,50,2,44,2,33,6,33,2,33,1,50,2,
    44,1,50,4
230 DATA 44,1,42,2,33,6,37,2,37,1,75,
    2,75,1,67,2,59,2,56,2,50,6,84,2,
    75,1,67,2
240 DATA 67,2,59,1,56,2,56,2,50,1,44,
    6,42,2,44,1,50,2,56,1,50,2,42,2,
    67,2,50,6
250 DATA 42,2,50,1,44,2,44,2,42,1,37,
    2,33,1,37,2,42,6,42,2,44,1,50,2,
    56,1,50,2
260 DATA 42,2,67,2,50,6,50,2,50,1,67,
    2,63,1,56,2,63,2,67,1,75,2,67,6
```

Use a Help Sheet: With all the different commands required to start my software, it became a nuisance to keep looking them up in the individual software manuals. Then I made a help sheet that lists the software, operating mode (64 or 128, 40 or 80 columns), monitor position (CVBS or RGB) and the LOAD and RUN commands for the software. It surely made life easier.
Glen Young
Renton, WA

Paper Brads as Printout Fasteners: I have found that the paper fasteners known as "brads" fit perfectly in the tractor feed holes of computer paper. Brads consist of two metal leaves attached to a rounded head, all in the general shape of a cotter pin or a nail with a split shaft; you push the shaft through the feed holes, then separate the leaves to hold everything together.

These fasteners come in handy if you want to attach different sheets of a printout without leaving them stuck together in one long sheet. You can also use brads to create a printout book whose pages are easy to add and remove.
Brian Noggle
House Springs, MO

Quiet Disk Drive Power Ups: I love my 128D with its built-in disk drive. What I didn't like was that every time I'd turn it on, the disk drive buzzed and clattered.

That sounded like costly repairs in the future, so I contacted Commodore and asked why this happened. It's not a defect in design, they said, it's just the disk drive trying to see if it's dealing with an autoboot disk.

My solution was to keep a non-autoboot disk in the drive whenever I power up. The result is no banging, clattering or sound of any sort.
Matt Morrison
Soldotna, AK

Printer/Interface DIP Switches: Have you ever taken a program back because you thought it didn't print correctly? If it skipped an extra line between printed lines, or if it failed to skip at all, the fault is probably in the DIP switch settings on your printer and/or your interface. (These are the little switches that most printers and printer interfaces have, which are used for setting various default conditions.)

One of these switches usually controls the number of line feeds that the printer or interface performs when it receives a RETURN character. If your software seems to be skipping an extra line, find the appropriate DIP switch and set it so no line feeds are added. If your software types lines on top of each other, set the switch to add line feeds. Things get more complicated when both units have a line-feed switch, but if you're aware of it, you can handle it.

In almost every case, the printer or interface *must be turned off and then on* after setting the DIP switches, so don't forget this all-important action.
James A. Bush
Indianapolis, IN

Improving Printer Interfaces: If you have a printer interface, you're probably using it with a variety of software packages, each of which may have its own requirements for interface DIP switch settings. After you set the DIP switches, you must turn the interface off and back on to get it to read the new settings. Usually, this requires you to reset the whole system or reach behind the computer and temporarily disconnect the interface power from the cassette port.

I made this chore easier by installing a normally-on push-button switch in the power lead to my interface. Now after I change my DIP switches, I press the button for a second or two; when I release it, my interface comes back to life with the new settings in place.

Depending on your interface and your construction skills, you may be able to mount the button inside the interface itself.
Todd Myers
Topeka, KS

Rejuvenating Cartridges: Do you have any cartridges that aren't working well, or maybe aren't working at all? If you do, you might be able to fix them simply by cleaning them.

To clean a cartridge, first remove its plastic case, using a razor

blade to slit the label where the cartridge comes together. You may also have to remove the label or make a hole in it, to get at the screw or screws that hold the cartridge together. After removing the screw(s), pull the cartridge apart, being careful not to touch the gold-colored contacts on the end of the printed circuit board.

Take a cotton swab dipped in alcohol and use it to clean the gold contacts, being sure to get both sides. A cruder method is to use a pencil eraser for the cleaning.

Now reassemble the cartridge and give it a test. The chances are good it will work.

Mike Barber
Park Rapids, MN

Save That Junk: If you break a joystick, mouse or other piece of hardware, I suggest you keep it around as a source of parts. Spare parts can often be taken off and used to fix other similar gadgets. For example, you or a friend could one day need the rubber ball in the mouse if some non-computerist decides to use it as a marble.

Brian Bagna II
Winnipeg, Manitoba
Canada

64 Bootmaker: This routine adds a boot file to the beginning of any program. When loaded into memory, (via LOAD"filename",8,1) the modified program will start up automatically. You can include special commands to start up, such as a SYS address, or RUN 100. The advantages:

1. BOOTMAKER adds the boot to the program instead of making a separate boot.
2. BOOTMAKER copies the current screen to the program, so you can add a title or a list of commands that can be seen while loading.
3. BOOTMAKER attaches to BASIC or machine language files, copying ML to its correct location upon loading.
4. BOOTMAKER allows a command to be automatically executed upon loading. The program can be RUN, SYSed, or even GOTOd.

To use, just enter and run. BOOTMAKER asks for a filename—this is the file you want to boot. Enter the name, and make sure the program is on disk and is a PRG file. After that, enter the command to start up the program (such as RUN or GOTO 20, or SYS 49152).

Following that entry, BOOTMAKER asks you to create a screen. This screen is displayed when you load your new booted file back into memory. You can clear the screen and type in anything; however, be careful about two things—don't press RETURN until you're ready to make the boot program, and press RETURN on a blank line.

After this, BOOTMAKER makes your boot file.

David Pankhurst
Montreal, Quebec
Canada

```
100 PRINT"64 BOOTMAKER":X=880
    :FOR J=1 TO 4:READ X$
    :FOR I=1 TO LEN(X$) STEP 2
110 POKE X,(ASC(MID$(X$,I,
    1))-65)*16+ASC(MID$(X$,I+1,1))-65
    :X=X+1:NEXT I,J
120 INPUT"NAME OF FILE TO BOOT";B$
    :INPUT"NEW FILENAME";C$
130 INPUT"ENTER COMMAND";X$:X=LEN(X$)
    :IF X>45 THEN PRINT"45 CHAR MAX"
    :GOTO 130
140 FOR I=1 TO X:POKE 827+I,
    ASC(MID$(X$,I,1)):NEXT
    :POKE 827+I,0
150 INPUT"CREATE THE FINAL SCREEN -
    PRESS 'RETURN' TO MAKE THE BOOT
    FILE";X$
160 SYS 880"[",8:OPEN 15,8,15,"C
    :"+C$+"=[,"+B$:PRINT#15,"S:["
    :CLOSE 15:END
170 DATA KJAAIFCLKJADIFCMKJPOIFCNKJAH
    IFCOKJIPINCGADKJADINCHADCAFGOBDIC
    EBIKJMKIN
180 DATA CGADKJPBINCHADJABJKJABIFCLKJ
    AIIFCMCADDKFKFCCKECDGJACJAABMIIFC
    NIECOGAKC
190 DATA DAOKLNDLADJNPPABMKNAPHKJAAIF
    FPKJAIIFGAKFCNIFFKKGCOIGFLDIOFFPK
    IIKOFGAKK
200 DATA JIBIGNPOAHIFFIIFCNIKGNPPAHIF
    FJIFCOCALPKDCAFJKGKCPPKAAAIMAAAIM
    IEMIGKE
```

128 Stethoscope: Use this little program to trick your computer-illiterate friends. If you present it with skill, they'll believe your computer can listen to your heartbeat.

Just press the joystick to your chest and hold down the button (heh, heh!).

Brian Noggle
House Springs, MO

```
10 PRINT"[CLEAR,RVS,SPACE5]
   128 STETHOSCOPE - BRIAN NOGGLE
   [SPACE5]"
20 PRINT"[DOWN3]HOLD JOYSTICK 2 ON
   HEART, PRESS BUTTON.[UP]"
30 IF (JOY(2) AND 128)<>128 THEN 30
40 SOUND 3,16,45
50 PRINT"RELEASE BUTTON WHEN
   FINISHED.[SPACE10,UP]"
60 IF (JOY(2) AND 128)=128 THEN 40
70 SLEEP 1:PRINT"THAT'S A WARM AND
   TENDER HEART![DOWN3]"
```

Screen Framer: Here's a Commodore old-timer, this one from an early newsletter called *The PET Paper* (they liked cute names in those days). It's been reprinted hundreds of times in newsletters and other publications.

The program puts a decorative frame around your 40-column screen, composed of the character specified by F$ in line 5010. If you're observant, you'll notice that the frame stops one character short of the right-hand screen border. The easiest fix for this is to make the screen and border the same color; even though the frame doesn't change, it looks like it's centered on the screen.

Other fixes are easier said than made, but they can, of course, be done. The main difficulty is that the cursor jumps to the next line as soon as a character is printed in the rightmost column, and it makes the computer think it's printing on a wrapped-around 80-column screen line. (You'll see the effect of this when you try printing inside the frame.)

Good solutions can be based on doing a cursor left, then printing an "insert" character to shove the F$ over to the edge. With

that and the rest of your bag of tricks, you should be able to get an almost-perfect frame.

The "almost" involves the rightmost position on the bottom screen line. When you PRINT a character there, the screen scrolls upward and you lose the top of your border. I usually solve the problem by poking the appropriate character into that position.

Louis F. Sander
Pittsburgh, PA

```
5000 REM SCREEN FRAMER
5010 F$="[CMDR +]"
5020 PRINT"[CLEAR]";
5030 FOR J=1 TO 39:PRINT F$;:NEXT
5040 PRINT"[HOME]"
5050 FOR J=1 TO 23
5060 PRINT F$;TAB(38);F$
5070 NEXT
5080 FOR J=1 TO 39:PRINT F$;:NEXT
5090 PRINT"[HOME]"
```

***Newsroom* Hangup Fix:** If your computer gets hung up when loading or saving in *Newsroom,* just shut the disk drive off and immediately turn it back on. It saves the hassle of reloading *Newsroom,* and it doesn't erase what you were working on.

Michael C. Posey, Jr.
Lynn, MA

***Paperclip Publisher* Tip:** On page 50 of the manual for this fine program, the author goes into great detail in explaining how to put a fancy border around the Banner Box. But when I tried to get the border by clicking the Box to Back tool, nothing happened.

After much head-scratching, I found the easy solution. Before starting the procedure, pull down the Box menu and scan both the Default and Current Requester to make sure the Transparent/Opaque toggle is on Opaque. Now when you press the Box to Back tool, you'll see the Banner Box letters. End of frustration.

Denton H. Plummer
Bradenton, FL

Royal Alpha 600P Printer Tips: This nice typewriter/printer comes with many functions to work with Commodore word processing programs, but there are other functions you can use. With *PaperClip,* for example, you can get superscript, subscript, different pitches and different line spacing. When making your printer file, use these codes, all with a secondary address of zero:

Superscript start – 27,68,255,255,255
Superscript end – 27,85,255,255,255
Subscript start – 27,85,255,255,255
Subscript end – 27,68,255,255,255
5 pitch – 27,31,23,255,255
10 pitch – 27,31,11,255,255
12 pitch – 27,31,9,255,255
15 pitch – 27,31,7,255,255
4 lines per inch – 27,30,11,255,255
6 lines per inch – 27,30,7,255,255
8 lines per inch – 27,30,5,255,255

If you have a different word processing program, the same codes should control the same printer functions.

Matthew Kelton
Richmond, VA

Amiga Software Reviews/Shakespeare

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miniature screens mentioned earlier). This is especially annoying when you are entering text into a frame which is wider than the screen display. If you try this, you may find yourself typing text into an edge of the screen where what you type never appears until you manually scroll the page to the right or left. I avoid this by inputing text into a narrow frame and when I'm finished, stretching it to full width. But even this is not a perfect solution, since an error in sizing (you make the new frame size smaller than the original) can cause you to lose text at the end of the frame.

(2) I still do not feel completely comfortable with the program's framing tool. Once selected you click on the point where you want the upper left corner of the frame to begin and then drag it down and toward the right. When you are happy with the size you simply release the mouse. Unfortunately for me, I am used to clicking the mouse a second time to signal I am finished with a task. If you do this with *Shakespeare,* you end up with another tiny frame attached to the lower right corner of the larger frame. Of course you can immediately delete the unwanted frame by clicking on the mouse's right button, but if you are not careful you may delete the larger frame instead.

(3) And although *Shakespeare V1.1* is much faster, improved and easier to handle than the original program, a few bugs remain. They appear most often when I am rapidly toggling and scrolling through pull-down menus looking for a feature. To be fair, the program has generated a full-blown guru message only once, but on other occasions it has locked the sizing tools and frozen the contents of a pull-down menu on the page. Let me add that (except for the one genuine guru—and it appeared while I was working with a 512K system rather than my normal 2.5MB), I have not lost any work because of the temporary lockouts. Each time the program appeared to be on the verge of lockup, it eventually (usually within a minute or two) corrected itself and operated as if nothing had happened. But such activity makes me nervous.

Except for those three complaints, I found the program a delight to work with and its printout quality excellent. Is *Shakespeare* the best desktop publishing program on the Amiga market? No, I don't think so, but then it is not the most expensive publishing program either. It has plenty of power, handles color better than any I've seen (although it cannot generate color separations like *Professional Page*), and (if you are restricted to dot matrix printouts) handles digitized images and fonts better than any of the current batch of publishing programs, bar none. The program produces sharp, crisp images both in color and black and white and includes support for PostScript printers as well. So, if you are serious about desktop publishing but can't yet afford a laser printer, you should consider *Shakespeare.* It is an excellent product you can grow with, and if you require color printouts, *Shakespeare* is the natural choice.

The program comes with two disks; one contains the main program another is filled with fonts, clip art, templates and samples. *Shakespeare* will work with an Amiga with only 512K, but to use it seriously you'll need at least one megabyte. The program is not copy protected and can easily be installed on a hard disk drive. The manual is well written, contains three tutorials, has a healthy index and appendices which cover hard disk installation and PostScript operations.

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you hold the stick, the more severe the effect. Left alone, each pitch defaults to the center of the strike zone.

Pitchers may also attempt to throw out a base runner if he suspects a steal. Due to the game's intricate system for base stealing, this could be a full-time job. As pitcher, you should know the tell-tale signs of a steal. But don't attempt a pick-off during your windup, or it will result in a balk. On offense, make the pitcher as nervous as possible. Mix up your playing style, including the use of fake signals, and he'll be a basket case in no time.

If you get a hit, the screen changes to an elevated view of the outfield. Control is automatically given to the player closest to the ball. Pressing the fire button, however, allows you to select another player if necessary. To catch fly balls, chase the shadow, not the actual ball. Attempt to stand at the point where the two intersect.

Nabbing grounders, like fly balls, is often a matter of speed, luck and intuition. Take into account a batter's average and style. A special option allows the defense to reposition players (except the pitcher and catcher) anywhere on the field. This is especially useful for power hitters—back your outfield up against the wall!

One of the most important aspects of fielding is quick and precise team interplay. The position of each base on the joystick corresponds directly to their position on the diamond. In addition, outfielders may throw to a "cut-off" man (usually the shortstop) for a faster relay. Always go for the lead runner to force an out, especially if he threatens to score.

Another option lets team managers change lineups. Here you may relieve a pitcher (his total number of pitches thrown appears on the home plate screen), substitute players and change batting orders. Pinch hitters are also allowed, a useful tactic late in the game, with bases loaded.

To my knowledge, *Sporting News Baseball* is the only sports game of its kind that allows you to save games in progress. Considering a single game can potentially run 18 innings, this feature makes perfect sense. Epyx and Terrence McInnes should also be congratulated for producing an outstanding manual.

Sporting News Baseball somehow combines the best elements of statistical and action games without sacrificing the integrity of either. Superb graphics, smooth animation and realistic play—this one has it all.

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ing down the void if used wisely. Turn off the tilt sensor before the game if you like.

Crazy Pool

Also known as bumper pool, this parlor game can be enough to drive anyone crazy. The object is to sink pool balls into holes on a small rectangular table. Bumpers are placed in strategic areas of the table to aid or hamper your shots.

In solitaire mode, players must sink seven colored balls with their cue ball within the shortest possible time. In two-player mode, each player must eliminate their opponent's four balls to win the game.

> For the strategy player, Billiards is easily the best game on the disk.

Three variations must be set before each shot is made: direction (a pointer represents your cue stick), spin and power. Table friction may be set before the game to adjust ball roll.

In addition to four pre-designed tables, the game features a simple construction set to design your own. Parameters include placement of bumpers, holes and balls. Final designs may be stored to disk.

HINT: Use high friction to achieve the most realistic play and avoid insanity. At lowest friction setting the balls react like ice cubes on a sheet of Teflon®.

When constructing a table, don't overload it with bumpers. Unless you're a crack shot, this only adds to the game's inherent frustration. Also, be careful not to create dead spots on the table—areas that are impossible to maneuver through.

Billiards

For the strategy player, this is easily the best game on the disk. Available in two versions—Carom and English billiards—this expertly-programmed game is a rare treat for one or two players.

English Billiards is played with two cue balls and a single red ball on the familiar six-pocket pool table. The object is to score points through various combination shots—hitting your cue ball against the others, sinking as many as possible. Each player's turn (called a "break") lasts as long as they continue to score points. Games can be played to either a set number of points or shots.

Carom Billiards is similar, but played on a table without pockets. Players must declare their moves before playing to be either a "Shot"—striking the other two balls with yours—or a "Safety"—hitting only one ball. Players earn points and may continue playing with each successful Shot. A Safety earns no points, but forces your next break to be a Shot. In either case, failed attempts give your opponent points.

The graphics, animation and game play for both versions are flawless. Shots are set up exactly as in Crazy Pool, but obviously with much more subtlety. The only weakness is the inability to change perspective. Shooting from the opposite end of the table is confusing.

HINT: Stick to English Billiards until your skill level increases. The object of Carom Billiards is almost too slow paced and obscure for anyone but experienced players to appreciate.

Foosball

I didn't think it was possible, but Ed Ringler proves me wrong. The world's first computerized Foosball game is a sight to behold. Incredibly realistic from start to finish, this one is a simulation masterpiece.

Foosball is a game of table soccer played with six rows of opposing players (six players on each team) attached to horizontally-moving rods. The object of this hyperactive game is to score the most points by knocking the "foosball" into the opposing goal.

Anyone who's played the real thing knows how utterly wild this game can be. There are three ball speeds available, and four computer skill levels. Playoffs can have as many as four games. Players have the option of changing sides after each game.

Once again, the graphics and animation are outstanding. Game play incorporates nearly every characteristic of the real thing, including the amazing ability to stop the ball and manipulate it with your players.

HINT: For novice players, simply hit hard, fast and often. You're bound to score sooner or later. It may not look pretty, but it's a laugh riot.

For seasoned professionals, try mastering ball control. Practice with the computer at a beginner level and develop indefensible goal shots from various points on the table.

Clubhouse Sports offers endless hours of fun with a truly diverse assortment of games. Go ahead, get that game room you've always wanted. You deserve it.

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that depicts the area of the world in which the game takes place on a colorful map, the sonar screen and the contour screen, which can be used in conjunction with the sonar screen to give a better picture of the surroundings.

The Soviets have only one mission—to capture *Red October* and prosecute the renegade officers aboard—you included.

The main control panel is the means by which you change your speed, heading and depth, either by clicking visual gauges on the approximate setting for each or by calling up another window that lets you set exactly the value of any of the three navigation variables. You will refer to the main control panel most often in *HFRO*. The officer icons call up other screens of functions appropriate to each one. The engineering officer icon, for example, will bring up icons for nuclear power, diesel power, caterpillar drive and propeller drive. By selecting the engineering officer icon and then, for instance, the diesel power icon, the ship will switch to diesel power, and the engineering officer will alert you of this via the message window. This is the system you use to play *HFRO*—you change heading, speed and depth on the main control panel and use the officers to examine incoming sonar and communications data, fire weapons and use the periscope.

The system in *HFRO* is very simple to use. Unfortunately, the game itself can become complicated at points. There is a lot that you have to juggle in your mind in *HFRO;* but, then again, they never said that defecting and stealing a top secret submarine was going to be easy. The game starts in the Reykjanes Ridge in the north Atlantic. You must carefully navigate through the Ridge without being detected and break to the Atlantic. Unfortunately, the Ridge is lined with Soviet and American vessels. The Americans are monitoring your every move to try to determine if you are lying to them. The Russians are trying to find you.

It is best to use the highly secret caterpillar drive to propel yourself through this area since it makes you undetectable to sonar. You'll also have to use the contour map to navigate the Ridge because of the many hills and valleys. Things will go slowly at first, and you will definitely crash the *Red October* in the first few games. This segment of navigation of the *Red October* through the Reykjanes Ridge is very difficult and may prove frustrating to many, but you have the option of saving games in *HFRO*, so that you can continue saved games after the Ridge to get to the meat of the simulation.

At one point in the simulation, you must fake the loss of the nuclear power drive to the crew, so they will believe that a leak has occurred that requires evacuation later. After this point, you have to use another drive system, either slowing you down considerably or making you a highly visible trace to Soviet sonar. You have to play this segment of the game most carefully, for every decision you make brings you closer to death or defection. If the Soviets have to destroy the *Red October* (with you in it) to prevent your defection and the submarine's capture, they will.

Examining sonar—a simple process—is the other area of the game in which you must excel. Knowing what ships are where is just as important as knowing how to avoid them. Although you should not make offensive maneuvers against either Soviet or American vessels, it may be necessary to fire defensive rockets. There are 26 Seahawk missiles on board, for your protection only. Don't fire them unless necessary—they make too much noise and will alert your presence to the Soviets. *HFRO* becomes a game of cat and mouse, with you examining ships nearby and them examining and chasing you. Just make sure you stay ahead of the game.

As mentioned before, the icon system makes the *Red October* very easy to control. This is largely due to the beautiful graphics used to depict the screens of the game. The contour maps are the most detailed, with the curves that represent the ocean floor drawn carefully. Also, the icons represent exactly what they are meant to, and you won't have to worry about decoding meanings. The sound effects are very nice, too, with very realistic sonar blips and explosions. Also included in the package are a crew badge, ship recognition chart and poster of *HFRO* to add to the atmosphere of the game and give you something more—free stuff! Leaving nothing to be desired (except a shorter navigation through the Reykjanes Ridge), *HFRO* is an excellent simulation that uses the full power of the Amiga in an exciting way. ▣

Amiga Software Reviews/Starglider II

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ties, you'll die often which brings up an anomaly: while still sitting at the control console and looking out your view screen, you'll see your own ship blasting into shards.

Also on the disk is the Atari ST version of *Starglider II*. It's a technical feat the Rainbird people aren't explaining, but somehow both programs reside on the same disk and presumably the disk tells your Amiga where to look for the proper program controls.

We've seen similar ideas in the past, the Commodore version occupying one side of a disk and the Atari or Apple version on the other. The economic reasons are to increase distribution while cutting distribution costs. It is a good plan and in the case of *Starglider II* an intriguing engineering trick, but wouldn't it be ironic if the Amiga distribution network helped expand the limited Atari ST network?

To repeat, *Starglider II* is a fast, exciting, visually beautiful game. It demands both arcade and strategic skills and demands them in great measure. My best advice is to throw away the novella, memorize the Playguide, and then go out and have some fun blasting alien ships. ■

Software Reviews/Speed Buggy

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The games go so quickly that you find yourself pushing the start button yet another time and trying to get further than ever before.

Buggy is flawless in its reproduction of the arcade game.

Each course captures the flavor and excitement of the originals. The easiest course is the Off-road course—the end of which you'll probably see first. The North course is the toughest and throws the most difficult collection and greatest number of obstacles at you. I strongly suggest that you play the Off-road course a lot at first to get the feel of the controls. Mix in a game or two on the other courses every now and then to add some variety until you think you're ready to tackle them. The scenery of each course captures the climate of their namesakes, adding graphic richness to what would otherwise be boring backgrounds. Off-road has mountains. North has snow, ice, evergreens and a couple of bridges. East has bushes and lots of greenery. West has mountains, long bridges and things that look like street lamps. Finally, South (my personal favorite) has palm trees, road banks and tropical surroundings.

Controlling your Speed Buggy is easy. All you have to do is steer left and right, push forward on the stick to accelerate and back to decelerate and use the button to shift from low to high gear when you've reached a high enough speed. Jumping your buggy is automatic, and you'll soon find that the on-screen vehicle will feel like an extension of your body—the sign of a well-programmed game.

The background music is enthralling, and the sound effects duplicate the coin-op version's boings and bangs. The graphics are superb, capturing all of the humor and cartoon images of the arcade. Although Data East has yet to put out a game for the Amiga, any ramp-up would surely place the quality of the game on the exact same level as the original, especially considering the fine work that was done for the 64. Post-game bonus points for the number of TIME gates you travel under and the number of seconds left on the clock if you finish the course are the last touches that make *Speed Buggy* one of my favorite home arcade games of the year. ■

Amiga Software Reviews/Carrier Command

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vide your ship with superb air assault, while the AAV's complement your sea power. You can control the four Mantas and AAV's, including their weapons. Before you can launch them you must decide what type of weapons to equip them with and their destination. Once you have done this, you may launch one or all of them at the same time.

Each aircraft and AAV may be set on auto-pilot or controlled manually. When you choose manual control, it will be as if you are actually in that vehicle. For example, if you are flying a Manta aircraft, it will operate just like a flight simulator allowing full control over the plane and weapons. The same also applies to the AAV's in the water; they will come right out of your ship and up on the island for assault. Using these two weapons along with your ship, you gain control of the islands.

But wait, the game takes place in real time, so while all the fighting is going on in one place you can switch to another. For example, if you are flying a Manta and wish to switch to your laser cannon back on the ship, all you have to do is select the proper option, and you're instantly back. The best way to clarify this is to say that you are in control of three games at once!

Summary

Carrier Command combines 3D graphics, superb sound and music with a unique twist of war game/arcade combat. The manual very clearly explains everything in great detail. Since *Carrier Command* was not meant to be solved in a matter of hours or even days, disk save and pause options have been provided for your convenience—a welcome addition to a game such as this. I think you will find *Carrier Command* to be just what the Captain ordered!

Hints from the Captain

- If you are having trouble taking over an enemy island, try the following: Take your ship as close to the island as possible without grounding. Then use the laser turret to destroy everything within reach. Now you are faced with one of two choices. First, you can load a Manta with seven missiles (three on front and two on each wing) and fly it in over the command center firing all the missiles into it to cause massive destruction. Second, you can send in an AAV with a virus bomb and take over the island without doing any damage (it may take some time to gain control of the island). There are advantages and disadvantages to using the above-mentioned methods under certain conditions, so don't be afraid to try your own tactics.
- An AAV in the water is a sitting duck for any aircraft to spot. To avoid losing them, take out the radar and main aircraft center (the largest object on the island). This will give you a brief amount of time before they start to rebuild—use the time wisely.
- If you are getting kicked from one end of the map to the other, don't panic. The first thing you should do is put the engines in full reverse and start immediate repairs. While traveling backward use the laser turret to lay down some heavy fire power. Once you have had sufficient time, you may return for the payback.
- In order to stop the enemy from a rapid take-over of your islands, find one of his. When you do, lay down some heavy fire power, and send some Mantas in for an air strike. This will slow him down or stop the takeover altogether. However, this is just temporary until you take over his island. ■

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each antagonist. (There is no lightning-fast all-text combat option, as in *Wizard's Crown.*) I also recommend it for those who have played RPG's for years but never played *D&D*—the experience will be as educational as it is entertaining: veteran RPGers will recognize the source of many elements for other games, such as *Alternate Reality*'s monetary system, *Enchanter*'s spell-casting procedure, and many more.

SSI has already announced a sequel for 1989, *Azure Bonds.* Another *D&D*-based title, *Heroes of the Lance,* is an arcade-style game, and the *Dungeon Master's Assistant* is a utility that reduces the amount of time required to prepare a paper and pencil *AD&D* game. All three are for the Commodore 64, while *Pool of Radiance* will be converted for the Amiga.

Ever Wonder What Would Happen If . . .

. . .aliens from space took over the phone company and used it to transmit a signal that would make everyone stupid so they could take over the planet? Neither have I, and I'm willing to bet Andy Rooney hasn't either. But someone at Lucasfilm Games did, because that's the story behind their latest animated adventure for the Commodore 64, *Zak McKracken and the Alien Mindbenders.* It uses the game system introduced in *Maniac Mansion:* characters are animated and controlled with a joystick or keyboard, and instead of typing sentences, you form commands by choosing words from a menu and clicking on items in the picture.

You play the part of Zak McKracken, a San Francisco-based reporter for the *National Inquisitor,* one of those outlandish supermarket tabloids. After solving a few puzzles, you'll meet more off-the-wall characters, such as Annie, the head of the Society of Ancient Wisdom and a pair of Yale coeds who turned their mini-van into a spaceship and flew to Mars. A special command lets you hop from one character to the next, and some puzzles require you to coordinate their actions. There are lots of demented jokes, excellent animation, special effects, sound and an original story that takes you from San Francisco to Peru and London. One commendable design feature makes it almost impossible to get killed, so you don't have to start over as often as in many adventures.

On the Business Front

Want to buy some land in Daventry, home of King Graham and the setting for the *King's Quest* series? Or maybe you'd like to buy stock in the "Land of the Lounge Lizards" made famous by *Leisure Suit Larry*? Now you can, in a way—Sierra On-Line went public recently. Until these moves, Activision (under parent company Mediagenic) was the only major entertainment software company listed on the stock market.

Bard's Tale IV & Wasteland II?

Since Interplay went independent, the big question in Skara Brae is will there be another *Bard's Tale*? Electronic Arts owns the rights to the name, as well as to *Wasteland,* so don't expect to see anything clearly labeled a sequel from Interplay (whose products are being distributed by Mediagenic, not Broderbund as I said a few columns ago). EA won't say if they'll do another of either game, but it's hard to believe they would kill off a pair of winners like these. And Interplay is working on new role-playing games that, while they won't be sequels, will allow you to use your characters from *Wasteland* and *Bard's Tale.* Interplay is putting together completely new game systems for both new RPG's with scenarios already written by Michael Stackpole (who worked on *Bard's Tale III*) and Steve Pearson (creator of *Champions,* a paper and pencil RPG).

Clues and Stuff

To decode these, count one letter back (BA = AZ). *Zak McKracken:* By qmbzjoh the lbapp, you can wake up the bus driver. To distract the flight attendant on the play, use upjmfu qbqfs in sink (to get the thing under the cushion) and fhh in microwave (to get the item in the bin). You can find a cave and a useful item in Seattle by giving qfbovut to the two-headed squirrel and using the usff csbodi on the mpptf ejsu. When Zak needs a spacesuit, use the xfu tvju, ubqfe gjti cpxm and pyzhfo ubol. To open the pyramid door on Mars, use the cpccz qjo tjho.

Pool of Radiance: Until familiar with combat, don't advance toward monsters. When combat occurs, they'll be further away, giving you time to position your team more effectively. User Archers and Magic to pick off enemy leaders, while Fighters go after the other monsters. Look in the opsuixftu dpsofs of the slums for treasure. In Cadorna's Textile House, you can get help from the Thieves' Guild at the cpuupn of the xfmm. You can also find a powerful NPC who will join the party if liberated. ■

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Jermaine: How much time did you actually spend with your heroes?

Hammond: I spent about six hours with Doc and approximately two hours with Bird. During that time they didn't ask us to make any changes, but they made a lot of great suggestions.

Jermaine: Do you remember any amusing stories about the game code itself?

Hammond: Before Erving's visit to Electronic Arts, I had stayed up several nights straight trying to get the first *One-on-One* demo to look decent. It eventually came time for me to catch my flight, but I still had some weird bugs in the code. So there I am demo-ing this "fantastic" new basketball game to Dr. J, and his shape begins dribbling upside down on the backboard. I "accidentally" turned off the Apple, said "whoops!", re-booted, and hoped for the best. This time, when I shot, the ball decided to circle the court a few times. Then it sailed off the screen. Murphy's law never seems to fail.

Jermaine: Have Bird and Erving ever played *One-on-One* head-to-head? If so, who won and what was the final score?

Hammond: I can't answer that question. By chance, I met Brian Taylor several months ago. He played three years on the Nets with Doc and shared two championship rings with him. Anyway, Brian was recently out to dinner with Doc, and he mentioned *One-on-One* as something he had enjoyed working on. That was really nice to know. I have also heard that Julius and Larry go out to dinner once in a while, but I doubt they've ever played head-to-head. If you ever meet them, you'll know what I mean.

Jermaine: How well did you play against these basketball legends?

Hammond: In real life or the game? Just kidding. Back then, I actually kicked both their butts in *One-on-One*. I also had the opportunity to shoot around with Doc when he flew out to San Jose. It was one of those moments you cherish the rest of your life. There he was, Dr. J, and I was shooting around with him! He would stand in the corner of the court on the baseline, shooting one swish shot after another. It was pretty impressive.

Jermaine: In simple language, how does the computer opponent operate in the game?

Hammond: First of all, let's talk about offense. Let's say that Larry is the computer player. The main thing he does is wait for you to lose your position and give him a lane to the hoop. Your opponent is also looking for a shot he likes, and if you're not on him tight, he'll shoot. If Bird doesn't have a lane to the hoop or a good open shot, he'll move around and try to catch you off guard. Here is a defensive trick you can use to prevent your computer opponent from clearing the ball by simply blocking his path. That would have been an easy problem to solve, but no one discovered it back then.

Defense is a much simpler operation. The computer determines where the best place for a defensive player to be, and it tells the computer player to go there. If the ball is close to his hands, he tries to steal it. If you jump, he usually jumps and tries to block your shot. I know it sounds simple, but there really isn't that much to the computer player. Incidentally, both computer players love to slam one down your throat.

Jermaine: Would you call the computer opponents in *One-on-One* artificially intelligent?

Hammond: No. They display specific characteristics of intelligence, like knowing when to shoot and what to do under certain circumstances, but these are all pre-programmed reactions to a very small set of possibilities.

> "Erving carries this air about him. He really cares about things. He cared whether *One-on-One* was good or bad." —Hammond

One of my strongest interests is AI and intelligence in general. Let's face it. Researchers at Stanford and MIT are making tremendous advances in this field every day. The routines of *One-on-One*, by comparison, are classified in the same intelligence group as rocks.

Jermaine: If you were playing a game of *One-on-One* against a friend, which player would you choose and why?

Hammond: I have pretty good joystick dexterity, so I prefer to use Doc. He's programmed to have a step up on Larry. If you're a little slower with joysticks, Larry's your man. He has a better outside shot and a little advantage in rebounding.

Jermaine: Were there any ideas for the project that simply didn't work out?

Hammond: We had this crazy notion (and even created the graphic shapes) where a dog would occasionally appear on the court and "water" one of the player's legs. This concept was eventually discarded because I ran out of memory, and some people thought it was somewhat distasteful.

The 64 version of the game was such a rush job that there wasn't a lot of time to add things. One item that was added to the 64 translation of *One-on-One* (and needed to be present in the Apple version of the product) was a sound to indicate a steal had taken place.

Jermaine: Did you have any trouble creating the slam-dunk scenario of the program?

Hammond: When I wrote the original script for *One-on-One,* I wanted to dazzle EA with the product design, so I added all of these cool features: slam dunks, shattering backboards (with a janitor to sweep up the mess), great animation, etc. This all looked great on paper, but unfortunately, I hadn't thought about the amount of work it would take to accomplish these feats.

Making the backboard shatter properly was a real pain, but the sequence was a lot of fun to watch in its finished form. The slam dunk was a little easier to do. Whenever the player gets close enough to the basket, the animation switches from a set jump shot shape to an over-the-head dunk shape. If you want to have a little fun type in a backslash [\], perform a slam dunk, and the backboard will automatically shatter.

When all was said and done, I wanted to create an authentic basketball simulation that was good enough to bear Bird's and Doc's names. I think we did that and more.

Jermaine: Have you received any interesting *One-on-One* fan mail?

Hammond: Yes, there were some real classics. My favorite letter came from a 12-year-old user, who wanted us to make a sequel to the Erving/Bird game. This individual wanted to see Magic Johnson and Air Jordan on the computer court. He even sent along some interesting stick-figure drawings of the guys performing slam dunks. They were really very funny. Now here's the punch line: all he wanted for his idea was ten percent of the royalties. What a guy!

Jermaine: What are you currently working on?

Hammond: First of all, I would like to say that *One-on-One* has been pretty good to me over the years. I've been able to do a lot of learning and research without the constant financial pressures of earning a conventional income. I'm presently working on an Amiga project. It was nice to step out of 6502 land and step up to the Amiga. I just wish there were as many Amigas as there are 64's out there, because it's such a great machine. ■

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plete the task of shooting the balls. I know that doesn't sound like a lot of time, but it's plenty if you don't mess around. The three-point contest is also a game of skill. First of all, you have to guide Larry to a position where he can pick up a ball. Once he has the ball in hand, you have to maneuver Bird to a "sweet spot" for the shot. There's also a sweet spot moment during the course of a shot, when it's possible to release the ball and know it will *positively* go through the hoop. I've been able to earn a couple of perfect "30" scores, but it wasn't easy (and I designed the game).

Jermaine: Both *One-on-One* programs feature one white athlete and a black one. Were things planned that way?

Madland: Not at all. It's an interesting twist of fate that the two best professional basketball players (five years ago and today) are black and white. Let's face it, we would have saved a lot of time and trouble if both computer players had been either black or white.

Jermaine: Tell me about your first *Jordan vs. Bird* design session.

Madland: First I'd like to tell you about the members of our team. I'm not really a "Coder," but I directed the design team, worked on the graphics, etc. Don Traeger became the producer of *Jordan vs. Bird,* while Don Transeth assumed the role of project manager. Garth Hitchens programmed the IBM version of game, Joe Hellesen ported the concept over to the 64, and Steve Chin (who has worked with me since the 3-2-1 Software days) was the official project artist. By the way, Rob Hubbard created the music and sound effects for both programs. Every member of the group was a veteran software developer, and we all had a lot of fun working together.

Getting back to your question, the first meeting took place on March 17, 1988. We all met at Angel Guardian High School on the north side of Chicago. The Celtics practice in this gym whenever they're in town (and they would be battling the Bulls twice during the next four days). We were using the building for a photo session to generate packaging art and instruction manual pictures. Our group would also have the opportunity to witness Jordan and Bird in action. Michael dropped by after a short workout with the Bulls. As Bird walked in, Don Traeger "air balled" a beautiful three-pointer. Larry gave his trainer a strange look and said, "What was that?" A moment later the place exploded with laughter.

To commemorate the event, Don Transeth gave Jordan and Bird a special gift: beautiful white satin jackets (displaying an attractive *Jordan vs. Bird: One-on-One* logo). I remember Larry coming up and saying, "Hey, my name is second!" Michael sort of grinned and replied, "I knew you were going to say something like that." Don Transeth quickly came up with an explanation. He told the basketball stars that Jordan was the challenger in the program, and the challenger always has his name first. Everyone finally burst out laughing because it was all said in fun.

As the players warmed up, they joked around about Michael's passion for golf and Artis Gilmore (the Chicago center who had recently been traded to the Celtics). On the court it was difficult to say who looked better because they have such different styles of play. Jordan is definitely the master of the slam dunk, while Bird can shoot three-pointers all day long.

> "I remember Larry coming up and saying, 'Hey, my name is second!' Michael sort of grinned and replied, 'I knew you were going to say something like that.' "
>
> —Madland

Once the session was over, we met with Bird to get some basic information, his opinion on certain things, and so on. Larry was a little quieter than I expected him to be, but he had a good sense of humor and tried to answer our questions as best he could. Larry didn't actually get to see the new game during this session. Bird also told us his shot tables are the same as they were five years ago when he contributed to the design of *One-on-One.* A shot table, in case you've never heard of the term, tells you the probability of a player making a shot from a certain location on the court.

Anyway, we finished the meeting at 5:00 p.m. because Larry had to go to a Celtics meeting. As he made his way to the door, I suddenly remembered I had nine posters for Bird to sign. He had already autographed eight basketballs for me (between photo shoots and the like) but I'm a big fan of Larry's, and this was the only time we would meet with him. I caught Bird at the door and asked him if he had a minute. He told me I had a second. So I pulled the posters out of their tube and looked for a place to lay them down. Unfortunately, I couldn't find anything to put them on. Larry, being the great guy that he is, got down on his hands and knees and signed every poster on the edge of the court. I thought that was pretty nice of him, considering he was already late for his meeting.

Traeger and Transeth drove Larry and his trainer back to their hotel and acquired some additional information along the way. It seems that Bird shoots approximately 80% of his three-point shots from the right side of the court. He claims that happens because of the way the Celtics' offense is structured. Larry also revealed he'd rather shoot a little turnaround shot than a straight jump shot. When asked how he would stop Jordan in a game, Bird laughed and replied, "No one can stop Michael. Not one-on-one. All you can do is slow him down a bit, keep him off balance, and play him for the drive. If he gets the baseline on you, you're dead."

During the last few minutes of the trip, Larry sat quietly listening to the radio. Maybe he was thinking about upcoming games or what he'd contributed to our software project. Whatever the case, he thanked our people for the ride and walked off into NBA history.

Jermaine: Did you have a design session with Michael Jordan?

Madland: We were scheduled to meet with Michael on March 21, but he flew in late and needed to get some sleep. Incidentally, Jordan came over and apologized for the postponement. The next day we drove over to the Multiplex in Deerfield (a northwest suburb of Chicago). This building is the new home of the Bulls, and we were seated at a table in the medical conference room. A few minutes earlier we had seen Michael practicing, and he really looked hot on the court. Anyway, there were no windows in the room, and it was poorly ventilated. Other people were also waiting to meet the slam-dunk king (photographers, two video camera crews and a reporter from WBBM Channel 2). The room got warmer by the minute, but producer Don Traeger was sweating the most. It had taken an entire year of phone calls and negotiations to get Jordan into that room for several hours of design work. He would not be disappointed. That session went something like this:

Initially, Michael sat at the computer monitor eating a candy bar. He asked, "Where's the dunk come in? That's what I want to see." We showed him the demo of

Bird performing a slam dunk, and he seems totally stunned by the action on the screen, "Nawww, Larry can't dunk."

Traeger grinned and explained, "Well, in the new game you can do several different dunks. Larry can do just one."

"That's good," said Jordan with a big smile. The ice had been broken, and Michael started telling us how he plays one-on-one basketball in the real world: "No offensive fouls, no free throws, clear the ball back to the foul line. You play to 11 or 15."

Traeger commented, "Right now we go to 21."

Jordan, with a look of astonishment on his face, was unbelieving, "21? By *ones?* That could kill a few men. I'd say to 15, straight 15, no deuce. . ."

Traeger: "You mean you just win by one?"

"Right."

Traeger is jotting down notes like a madman. "What about three-point shots?"

"Worth two points. And we play make 'em, take 'em." In other words, score a basket and keep the ball. It's also called "Winner's Outs."

Now it was time to get down to business. Jordan created a shot chart (like the one Larry did five years ago) on a nearby blackboard. Basically we had a simple drawing of the computer court that had been divided into 64 grid squares (six pixels by six pixels in size). Michael examined each square and input the probability of how well he could shoot from that particular position. In the end, we knew where all of his sweet spots were. This information allows us to make each computer figure an authentic replica of the real player.

The Jordan character, for example, performs most of the shots Michael does in real life. It also has the same shooting capabilities. In short, you can literally assume the role of Michael Jordan in the game.

As Michael continued to work on the chart, Traeger pointed out a spot that Bird didn't like on the left. Jordan asked, "He didn't like that side?" Traeger nodded. Michael smiled and said, "Good." As other people began to laugh, Jordan looked around. "This is like a scouting report."

Then we demonstrated the entire 64 Slam-Dunk Contest, which really got Michael excited. He actually picked up the joystick and started moving his figure around. Even though it was more of a conceptional game than actual game play, Jordan did pretty well.

Michael also told us about one of his favorite moves. "See, there's three basic moves to my jab step. There's jab step and go, jab and crossover, then the rocker step—jab, fake the shot, then drive on by. A triple threat situation." If you're not into basketball, a "jab step" is merely a fake motion to the right before you start dribbling to confuse your opponent. The player hopes this maneuver will open up a path to the basket. If you fake to the left, it's called a "crossover" or "rocker" step. Jordan was really surprised to learn that both of these steps were already in the game.

As the session continued, Traeger played a *One-on-One* game and read the final statistics on the screen: The animated Jordan was 11 for 13 from the field for 84%, with four steals, two blocks, two rebounds and one missed three-point attempt. "Yeah, sounds like me," laughed Michael.

"Bird laughed and replied, 'No one can stop Michael. Not one-on-one.' "

—Madland

He also made some comments about playing against Larry Bird: "Man, he can get it off from any stance in any position. And his fake shot, he can actually fake it and get me off my feet. I mean he's unbelievable with his shot. When you think he won't shoot he will, when you think he will shoot it he won't—that's the type of shot he has. And Larry plays great with his back to the basket too. He's got a tough fadeaway jump shot, but then he'll also do his fakes and duck under the defense. I wouldn't take his jab step. Because if I retreat, I'm giving him his jump step, which is just stupid. He's gonna have to beat me on the drive, which I don't think he can do." He grinned.

We were running out of time, so Traeger asked our guest to quickly critique the ten dunks of the slam-dunk contest. This is what Michael had been waiting for. The first dunk we loaded was called the "Kiss-the-Rim" dunk. We understood that was the name Michael had given to it, but he told us, "I don't name none of 'em. I just do 'em." Another dunk got an unexpected response: "Man, that's Dominique's Drunken Dunk! I can do it, but not in a dunk contest." Then I demonstrated the 720 Double Spin Fantasy Dunk. Jordan's grin exploded, and he said "Hoooo, that's nice."

During the final moments of the session, Michael revealed he would rather be a PGA golf pro if he had it to do over again. I believe he has an 8 handicap and his favorite courses include: Pinehurst No. 7, Desert Highlands, Butler National and Medina. After autographing enough merchandise to stock a sporting goods store (and signing enough posters to open a poster shop), the NBA slam-dunk king departed from his loyal followers. I'm sure Dr. J would approve of the guy who "succeeded" him in our new basketball project.

Jermaine: Would you describe Jordan's personality?

Madland: Michael was very attentive. He's funny, and always talking about the way the "brothers" used to do things. Jordan also treated every member of the team as if he were working with them one-on-one. Michael has this special innocence about him and never talks negatively about anyone. I really enjoyed working with him.

Jermaine: Can you give me some information about the program in general?

Madland: First of all, the players require 32K of memory (just in the *One-on-One* game alone). Basically we used the same image for both players and customized each figure by adding different uniforms, hair color, shoes, etc. Jordan and Bird also have different movements on the screen. You won't see any knee pads or sweat bands on these characters because if we put them on one player, they'd have to appear on the other one. Memory restrictions forced us to do things in this manner.

It's also interesting to note that the game features four colors, with two of them being shared. The brown color (used for Jordan's skin) was shared with Bird's jersey, while Bird's skin color appears on Jordan's jersey.

Incidentally, the *Jordan vs. Bird* IBM graphics operate at 12.5 frames per second. Commodore 64 animation, in the same game, moves at approximately ten frames a second. We sacrificed a little bit of speed on the 64, but in return we got smooth-scrolling graphics, and the figures are a third larger than those in the IBM game. By the way, the game play doesn't suffer because of this slight reduction in speed.

Before we move on, I'd like to tell you about the slam dunks. In *Jordan vs. Bird* ten different dunks can be performed in the slam-dunk contest, but only three of them can be used in the one-on-one matchup. Once again, memory restrictions came into play. The average dunk sequence contains 15 frames or pictures.

The Dr. J Slam contains about 14 frames, while the Windmill Slam has approximately 18. Other slams include: the Nike Slam, Back Slam, Fantasy Slam, Statue of Liberty, Bounce Slam and Two-Hand Hammer. If we had made an eleventh dunk, I'm sure it would have been like "Kiss-the-Rim," but Jordan would twist his back on the screen and put the ball in backwards.

Jermaine: Did you have any problems making *Jordan vs. Bird?*

Madland: Merging player statistics with the game play gave us a lot of headaches. But making blocked shots look and feel right was our biggest problem. We spent many hours trying to solve this particular problem. The end result looks and feels pretty good.

Jermaine: Why doesn't the backboard shatter in *Jordan vs. Bird*?

Madland: In the NBA you get kicked out of a game if you shatter the backboard. We didn't want anybody ejected from our game, so you don't have that ability.

Jermaine: Would you share a secret about the program that few people know?

Madland: If you load in the warm-up phase of *One-on-One*, you can play a game of HORSE against a friend or challenge someone to a free-throw shooting contest. Now I know these games aren't mentioned in the manual, but you can still play them if you keep your own score.

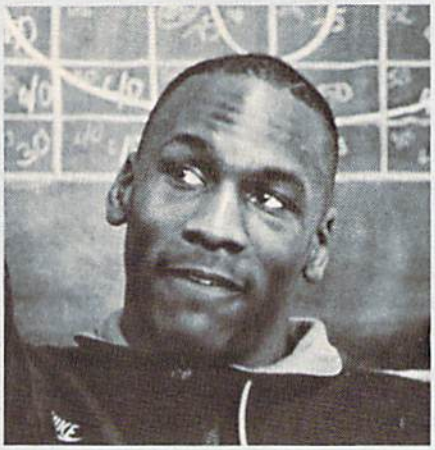
Jermaine: Can you relate a final Jordan story?

Madland: As we wrapped up the three-hour Jordan design session, Traeger talked about adding music to the program. I remember him asking Michael for the name of the song they play at all the Bulls games. Jordan gave him a sour look and replied, "I don't know, I hate it though." And that was that.

A moment later, Traeger asked him how he felt about replacing Julius Erving in the game. Michael became serious for a second: "You know, the first time I played the Doc, I was scared. I mean, he was Dr. J, you know? I didn't do too well. So after that, all I wanted to do was beat him." He paused for a moment, and added, "But now he's gone. And now all I want to do is carry on the tradition. He was class, you know? I just want to be as good for the game as he was."

Jordan also told us he had played computer games before. Once this game is finished, he invited everybody to come over and teach him how to play it. I hope you're reading this, Michael, because we all want to take you up on that offer. ■

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"Man, [Bird] can get it off from any stance in any position. And his fake shot, he can actually fake it and get me off my feet."

—Jordan

made a number of suggestions regarding take-off positions, body positions, the spread of my legs when I land and even my infamous tongue hanging out of my mouth. As a result of these meetings, I feel we were able to develop a very accurate portrayal of Michael Jordan on a computer screen.

Jermaine: Is *Jordan vs. Bird* a realistic simulation of one-on-one basketball?

Jordan: I think *Jordan vs. Bird* is a very realistic simulation of one-on-one basketball. In one-on-one basketball, there is no one to help you if you make a mistake, no one to give you an assist, no one to get a rebound for you, etc. It was just me against Larry, and no one else to take the blame or the credit.

It is also a very realistic simulation of my game versus Larry's game. My game involves more pulling Larry out and driving by him for my favorite shot, the dunk. I would use my jab and rocker steps and look for my sweet spots on the court, as would Larry. But playing Larry, I want to play very close up against him, knowing that his greatest strength is his outside shot. If he is able to fake me and go by me, then he has an advantage, though I think I have greater quickness than Larry.

Jermaine: What is it like to play pro basketball against a man like Larry Bird? What is it like to play with Larry on the All-Star team as you have in the past?

Jordan: Playing *with* Larry Bird is certainly more enjoyable than playing *against* him. Larry may be the greatest shooter ever to play the game, and if you give him an inch, he'll bury a jump shot on you. Playing with Larry also allows you to move without the ball and know—perhaps more than any other player with the possible exception of Magic Johnson—that you will get the ball if you flash open for even a split second. The computer game demonstrates Larry's style very well, and it shows that he is a tough rebounder, a savvy gutsy competitor and, of course, the premier three-point shooter in basketball.

Jermaine: What are your particular strengths? If you were controlling the Bird character in the computer game, what would your strategy be against Michael Jordan?

Jordan: If I were playing against myself, I would allow me an outside shot, for my strength is driving to the basket and going by my defender for a dunk or easy layup. I consider myself a good outside shooter, but if I were playing against myself I would allow the outside shot to prevent the drive.

Jermaine: How long do you estimate you'll continue to play professional basketball?

Jordan: I recently signed a new, long-term contract with the Chicago Bulls. It is my goal to bring a world championship to Chicago. With the development of some of our younger players and the addition of a few new ones, I hope to accomplish this goal at least once during my career.

When my contract expires, the lure of the golf course will be hard to avoid for me. I have definite ambitions to become a PGA golfer. Who knows, maybe "Air" Jordan will someday describe the length of my drives, not just the height of my jump!

Jermaine: During the *Jordan vs. Bird* design session you even went so far as to say that if you were to come back again, you'd like to be a PGA pro golfer. How is the golf game coming?

Jordan: My off season from the NBA is my golf season. This year, I've gotten my handicap down to about 8, but I'm not ready to hit the tour yet—it is a lot easier for me to make a living playing basketball right now. But we'll see.

In closing, I'd like to thank everyone who contributed to this project. A special thanks goes out to David Dempsey and Don Traeger at Electronic Arts for helping me set up the interviews. I couldn't have done them without you, guys. ■

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fire. This option does not work with the mouse—only the gun. Other interesting parts of Capone are the interior of the warehouse and the bank. Don't shoot the tommy gun in the warehouse, for each and every crate is filled with TNT. Your shots have to be much more carefully placed than a machine gun would allow. In the bank, falling dynamite sticks add to your problems, because they have to be shot before they hit the floor and take away a life.

You can choose three difficulty levels in *Capone:* Cadet, Rookie and Captain. Cadet is the easiest, but it gets as hard as the Captain level by the time you get to the post office.

Capone is great fun and has excellent graphics, game play and sound effects to make it worth your efforts.

P.O.W.

P.O.W. is yet another great idea from Actionware. In this title, you are a soldier who must shoot enemies in varied scrolling settings like in *Capone,* but these enemies run across the screen, drop in on parachutes, drive tanks and airplanes and throw grenades. You must rescue six hostages in the enemy village by making it to the village and then to the ocean, where a reconnaissance craft awaits your arrival. The scenes are much more varied in *P.O.W.* than *Capone,* and include a swamp, ocean, bridge, jungle and village.

There are also more moving characters on the screen at once than in *Capone,* making the game more nerve-wracking and much more difficult, but not impossible. The major portion of the screen is again devoted to the scrolling landscape. Along the bottom are a health bar, grenade counter, ammo clip counter, bullet icons and score. As you shoot, bullets disappear from the screen. When gone, the bullet clip count reduces by one, and a fresh supply of bullets is drawn on the screen. In the same way, when shooting tanks, planes or helicopters, a grenade is automatically used, deducting from the grenade counter. How do you fill up on ammo? Every now and then, a bullet clip, grenade or medical kit appears on the ground. By shooting them, the respective counters and health bar are increased. This is the way you keep alive in *P.O.W.*—by having a quick eye and trigger finger.

Difficulty level in the game is chosen for you by the computer based on your performance in "boot camp," your first challenge in *P.O.W.* Boot camp is essentially a target practice range. "How well you do at target practice, with targets flashing by, will determine your mission," Parry explained. "The difficulty is in how many places you have to visit."

In addition to having good aim and quick reflexes, *P.O.W.,* unlike *Capone,* requires a certain amount of thought. In a couple of the scenes, you must think as if you were really in Vietnam, where the game takes place, and do things that would be necessary for survival. In particular, you must take out a radio tower to prevent further communication by the enemy to call in reinforcements. Then you need to destroy the armory to reduce the arsenal they will use against you. Parry sums it up, '*P.O.W.* is different from *Capone* in that you will never get those hostages out unless you do certain things that make logical sense. You have to pretend that you are there. While *Capone* requires a combination of speed and action, *P.O.W.* requires a combination of speed and thought." I couldn't have said it better myself. These are the factors that you must weigh against each other when buying either *Capone* or *P.O.W.*

Creature

From the looks of it, *Creature* promises to be just as exciting as *P.O.W.* and *Capone,* except it is set in an entirely different environment—on a spaceship. It turns out that your ship is overrun with aliens, and you must match wits with them to save your ship, prevent new aliens from hatching out of eggs and play exterminator, with the alien creatures as your pests.

Unfortunately, I couldn't preview *Creature* for this article, but I've noticed that Actionware's attitude is different—more professional—toward this game. Parry explained why *Creature* wasn't ready yet: "It seems that most people who have a success port it to other formats like the IBM and Commodore 64. You might say that that is exactly what Actionware is doing right now—converting the existing games to other formats before resuming work on *Creature.*" All I can say is "Hurry up, guys!" I'm almost positive that *Creature* will surpass my expectations and present yet another great Actionware game. Only time will tell.

Conclusions

Actionware has a good thing going, and their success will be determined by whether they maintain the same level of quality and dedication found in past releases. Parry reassured me by saying, "We were really hoping to crank out one game a month, but we're trying to make each game unique and better, and it seems like making good games just takes time." It's a shame that all software developers don't adopt such a philosophy.

Two factors that contribute immensely to the realism in the Actionware titles are the graphics and the sound effects. The graphics must be experienced first hand. A slide in a magazine doesn't capture the beauty of Brian and Dana's work. The figures are very lifelike, with fluid animation and vivid colors. The sound effects are mind-boggling too. The glass really shatters, the men yell, the choppers drone, the tanks hum and—most importantly—the guns sound like they are digital recordings. Parry recognized these achievements: "Two strong points of the games are the graphics and sound. I've got top-notch graphic artists. Usually, after five seconds of seeing the game and screens, anybody knows that this is superb artwork. Also, to be able to pull the trigger and put the result through a big 12-inch woofer is great—I love the sound effects."

Parry outlined a tentative plan for the future that relies heavily upon the success of the current games: "It's a two-year plan. The first involves moving these two products to the other formats. The second year involves sticking with what we've got in the Light Gun and making the games more interesting. I enjoy pure action games. But Pierre, who is a major influence on me, would like to see every single game outdo the previous game."

This certainly should make any avid gamer happy—a game company that plans to produce more of the genre that they've created, while improving on everything that's come before.

As a bonus to all the people who have read this far, I'll describe yet another feature of *Capone* that makes it worth playing. Near the post office there is something (I won't tell you what) that you must hit to get 30,000 points and six lives. It's an "Easter egg" of sorts that I've found, but I'm sworn to secrecy by Parry, who told me that even his wife and daughter don't know the secret target.

Parry's attitude leads me to expect a lot of good times from Actionware games on my Commodore computers in the coming years. All of the factors click into place. Parry's parting remark sums up Actionware's philosophy and really promises a lot more to the gamer: "The games are a combination of action and a little bit of adventure that makes you think—but not too much." Happy shooting, law enforcers and soldiers in the Commodore world!

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If you can work around these task limitations, you'll like the program. It is far from the best program on the market, but it delivers a lot of power for the price. So if you just want to test the DTP waters before getting in over your head, or you're just curious about desktop publishing, this one is worth considering. (Note: *Publisher Plus* was reviewed in the August 1988 issue of *Commodore Magazine*.)

PageSetter V1.1e

In 1987 I picked *PageSetter* as the number one productivity program then available for the Amiga. The conditions in 1987 were unique: the program had little competition, it was (is) a wonderful program with plenty of power, and its intuitive design made it easy to use. But just as competition in any field brings better products to the market, competition in the Amiga DTP field has done the same. *PageSetter*'s year as champion is over, but this is still a good, affordable, entry-level publishing program.

The program uses a true WYSIWYG approach to publishing; it contains a built-in word processor and graphics editor. Because *PageSetter* is intuitively designed, even the novice publisher can be using this one in less than an hour. Using either a toolbox or pull-down menus, the user can employ columns, boxes, different font sizes and styles, import graphics or text from other sources, wrap shadows around objects, justify text, etc.

One of the barriers that keeps *PageSetter* from competing with higher-priced DTP programs is that it is not PostScript compatible. (PostScript is the graphic language the more advanced laser printers use.) This can be corrected if you are willing to part with $50 to buy *LaserScript*.

PageSetter V1.1e is for those who own earlier versions of the program, don't intend to include digitized images on their pages and don't expect output to a PostScript printer. The only real complaint I have with the program is that it handles digitized images poorly. But because it was designed with the low-end user in mind, it handles text printed on a black and white dot-matrix printer better than some of the more expensive programs. If you are sure you will never go beyond those restrictions you'll like *PageSetter*. The program is easy to use and V1.1e includes an option to save your entire document as an IFF file which you can load, edit and print using any graphic package like *DeluxePhotoLab*.

The current version is *PageSetter V1.1e*. Like the version which came before, it is not copy protected, but this release uses a security check which requires you enter a word from the manual each time you begin.

City Desk 2.0

This early entry in the Amiga DTP arena is already in its third revision. The current version of *City Desk* is V2.0 (preceded by V1.0 and V1.1) and like the earlier versions uses a simple WYSIWYG approach. The program is not copy protected, so you can make as many backups as you think you'll need. Happily, the program supports multitasking, so you can switch between it and any other program you want to run.

Most of the program's features can be accessed by picking a tool from the toolbox. With it you can move, copy, crop, outline, underline, size, edit, magnify or trash both text and graphics. The only time you have to use the keyboard is to input or edit text for headlines or stories. The text editor of this new version of *City Desk* has been completely redone, so you can input or edit entire documents just as you would with a dedicated word processor. The graphic editor has also been enhanced. The older graphic editor was good primarily for importing and cropping images and little more, but the one included in V2.0 is much more powerful. It won't replace *DeluxePaint II* but as a built-in editor it is excellent. *City Desk* does not support color, but instead converts imported color graphics to 16 shades of gray.

After a column of text has been placed on the page, it can be moved around like a piece of paper. Separate columns can be chained together to form large documents or broken up to create smaller ones. All columns (containing text or graphics) can be selectively sized and relocated at any time. Because each object is assigned a display level, you can easily move objects over or under each other to give your documents the illusion of depth. Text fonts, size and style can be changed instantly via a Preferences menu assigned to each column of text. There are no limitations to what size your text can be defined, thus fonts can be adjusted to fit any size your document requires. The screen display can be shown using any resolution between 320 × 200 and 640 × 400 points. One of the early complaints about *City Desk* was the clumsy text editor shipped with version 1.0 and 1.1. The folks at MicroSearch apparently heard the complaints; the new version has a much advanced and easier-to-use text editor.

City Desk supports not only all the Preferences drivers but also PostScript and Hewlett-Packard. But because the developer believed many users would be restricted to dot-matrix printers (at least in the beginning) they went out of their way to squeeze as much resolution out of those devices as physically possible. As a result, *City Desk* can produce excellent text images on a 24-pin dot matrix printer. But like *PageSetter*, the program doesn't translate digitized images as well as I would like. Perhaps the final release version of *City Desk V2.0* will handle graphics better (at this writing I am using a beta version of *City Desk V2.0*). (Note: A review of *City Desk V1.0* appeared in our February 1988 issue.)

Shakespeare: The Page Integrator

This program too, has been revised and refurbished twice. All the annoying bugs associated with the early version have been squashed, and *Shakespeare* now stands as one of the better Amiga publishers. It deserves that accolade because of the excellent way it handles both color and black and white output, plus supports

both laser (including PostScript) and dot matrix printers. Its toolbox is filled with all the options you'll need for serious, quality publishing, regardless of whether you need only black and white printouts or will be using all of the Amiga's 4000+ colors.

One of *Shakespeare*'s most impressive features is that it can handle graphics in any resolution (allowing multiple resolutions on a single page), plus it lets the user employ all of the Amiga's colors on a single page. Rather than supply different magnification scales to show its WYSIWYG display window, the program allows you to open another window which displays a miniature of the page you are editing. This method means you can edit a magnified view while seeing the effect of those changes in the overall image at the same time—a feature layout artists will like.

Like the other publishing programs, *Shakespeare* restricts text and graphics to defined boxes. Text can be defined with mixed fonts, styles, sizes and even colors. (*Shakespeare* shows color changes on screen and does not make you wait for your printout like other packages.) One of the more appealing features of the program is that it allows you to load several graphics and fonts in one session, so you can pick and choose later as you edit. This friendly scheme makes it easier to keep track of fonts or images stored on different disks.

The program supports PostScript, H-P and all Preferences printers, but where it really pulls away from the pack is in how well it can drive a 24-pin matrix printer. If you are sure you will never move beyond a dot matrix printer, yet still need to incorporate digitized images in your documents, you should give this publisher serious consideration. Of those I tested, I was more pleased with the results this one produced on a dot matrix printer than any other package (the final versions of *City Desk* and *Publishing Partner Professional* were not available to compare at this writing). (Note: For a complete review of *Shakespeare* see page 42.)

Professional Page

If I were asked to name the champion desktop publisher for the Amiga it would have to be *Professional Page*. This is more than just a mature version of *PageSetter,* it is a publishing extravaganza. There are few publishing chores the current version can't handle.

Although the program is intuitively designed, most users will still have to refer to the manual occasionally simply because the program has so many options it is easy to become overwhelmed. After a few hours of practice, the logic of the entry scheme began to sink in, and I had little trouble driving the program. *Professional Page* is not copy protected and is easily installed on a hard drive. It allows the user to view and edit (using traditional word processing commands) the image from five different magnifications. The WYSIWYG display employs sizable fonts, kerning, tracking, justification, hyphenation, irregularly shaped graphics, flow around text and multiple pages (up to 9999). Text or graphics can be bordered, grouped for easy positioning or sized any time.

Professional Page is more than just a mature version of *PageSetter;* it is a publishing extravaganza.

All of the Amiga DTP programs allow the user to either import text from a favorite word processor or input the text directly into a defined column, but *Professional Page* allows you to reverse that procedure. With it you can highlight and save strips of text as a file which you can then edit with your favorite word processor or spell-checking program. Of course, the normal operation is to write text with a word processor, check it for spelling errors and then import it into your DTP program. But having the option to reverse that task will be welcomed by most editors.

The program comes with rather unusual drawing tools. Although you can import and employ any IFF file, the program's own tools handle images more like a CAD program (normally associated with architectural drawings) than a traditional graphic editor. Each image (line, circle, curve, box) created with these tools is treated as an independent object until you group the images together. You can do a lot with the tools, but those accustomed to programs like *DeluxePaint II* will find it a little confusing at first; on the other hand, CAD users will feel right at home.

When it comes to handling digitized images, this one shines. Not only can it display and print them, but it can also process them in color. If you wish, it will even separate and screen an image. If you take your four-color document to a commercial print shop for volume printing you won't have to pay to have screened separations processed (an expensive procedure).

The program's greatest power (and concurrently its greatest weakness) is printer support. It supports any Preferences printer as well as PostScript printers. You can even print your PostScript files to a disk and take them to a commercial printer if you wish. When it comes to PostScript printing, *Professional Page* shines, but if you want to use it with a dot-matrix printer, you are going to find this Gold Disk program slightly tarnished. In the beginning Gold Disk viewed this publishing program as a professional entry-level product only and did not support dot matrix printers. After the first release they got so many requests from people wanting to use it with their dot matrix printers that they sent their programmers back into the code to make the required changes. Unfortunately, the results were mixed. You can now use *Professional Page* with a dot matrix printer, but the text images you will get are far from impressive. On the other hand, the program translates graphics, including digitized photographs very well—even when dumped to an inexpensive printer.

The bottom line is this: If you have access to a PostScript-compatible printer and are looking for the best desktop publisher on the Amiga market, *Professional Page* will make you look good and keep your clients happy.

Publishing Partner Professional

Many Amiga users have eagerly awaited the release of *Publishing Partner Professional*. By the time you read this, that wait should be over, but as I write this only the beta version has been completed. Without knowing how the final version will differ from the pre-released version, my remarks must be chosen carefully. The program has captured the attention of many Amiga owners with its bold advertisement (giving the impression that the program was ready to ship) which compared its features and price with one of the industry standards, *Pagemaker*. With so many claims and such a reasonable price it is easy to understand why anyone considering a DTP program would be interested.

Understandably, the long delay in getting *Publishing Partner* to market has curbed some of that interest. The question now is whether this one is worth waiting for, and can SoftLogik turn the sour grapes caused by delay into something sweet? Only time will tell. I can say that

the early version I used does include all the features mentioned in the ad campaign: hyphenation, kerning, sizable fonts, search-and-replace editing, object grouping, undo command and spell checking. I hope they will all be included in the final version and the price will still be affordable. Until the finished program is available for evaluation, I can't say how it will compare to the other publishers.

The Three If's

Time and competition have improved all the current DTP programs. In most cases, user feedback (a developer's best guide) has been heeded by the developing company, and where there was a need for change, those changes were included in the current version. To decide which program is right for you, consider the three ifs:

If you are curious about desktop publishing but don't want to invest a lot of money, need only black and white printouts and will be using a dot matrix printer, you should consider *PageSetter* or *Publisher Plus*, both will meet your needs and will not drain your savings account.

If you are serious about desktop publishing but can't afford a laser printer, you should consider *City Desk* or *Shakespeare;* both are excellent products which you can grow with. If you need color printouts, *Shakespeare* is the natural choice.

If money is no object, you intend to get serious with desktop publishing and will be using a laser printer, your choice should be *Professional Page*. It will meet your every need and make both you and your documents look good.

Just where *Publishing Partner Professional* will fit in the three If groupings is yet to be determined. Depending upon how many of its boasted features actually are delivered (and when) the program could fit into any of the three categories.

Beyond Desktop Publishing

The more involved with desktop publishing you get, the more you'll find that other programs can help you polish your documents. There are dozens of aides out there, but among the more exciting ones I've seen are these:

The foundation of any layout is the text—the letters—which make up the words on each page. The impression those letters have on your audience or clients is greatly influenced by which fonts you use. It doesn't take most editors long to realize just how difficult it is to decide which font and size is best for the chore at hand. Thus most DTP users try to collect as many different fonts as they can get their hands on. Several companies sell disks filled with fonts, and you can even find some interesting fonts in the public domain. But if you really want to get serious—or just want a font like no other—you should consider designing your own. That is where a program like *Calligrapher* can help. It is a font editor which lets you design professional-quality fonts. The program is flexible—it lets you design fonts as large as 160×256 pixels, and you can even include patterns and colors. The program is not difficult to control but does require some artistic ability and a willingness to experiment. (Note: A review of *Calligrapher* appeared in the July 1988 issue of *Commodore Magazine.)*

The most impressive graphic packages I've seen this year is Electronic Arts' *DeluxePhotoLab*. I've heard it described as the heir apparent to *DeluxePaint II*. While the program includes an excellent graphic-editing module, it is more than a drawing program. What makes it so valuable is that it can handle graphics in any resolution, which means you can import any IFF image, edit it and then save it in a form which your desktop publishing program can import. This is especially valuable if you intend to use digitized images in your documents. When such images are used, the contrast of the images is very important if you want them to print properly. Using *DeluxePhotoLab*'s "Colors" module, you can import digitized photographs and adjust each individual pixel to get the perfect image you want to include in your layouts.

Because good graphics are important to visually-appealing layouts, you'll want a good graphics program around to design those unique images which will distinguish your publication from others. Again *DeluxePhotoLab* can handle most of your needs. The program has found a permanent spot in my software library, but has not yet replaced *DeluxePaint II*. I don't know if it still deserves to be considered the supreme Amiga graphic package or not, but I still prefer it over anything else on the market (maybe I'm just getting older and set in my ways). *(DeluxePhotoLab* was reviewed inthe November 1988 issue of *Commodore Magazine.)*

Adding digitized images to your pages means you'll need NewTek's Digi-View, a video digitizer. With it and a simple black and white video camera, you can capture any image you can focus a camera on and import it into your system. Like so many of the early Amiga releases, Digi-View is getting older and better. The current version of the product is V3.0; it includes overscan (for borderless screen images) and a feature for capturing line art (in earlier versions white backgrounds more often than not were captured as shades of gray).

PIXmate from Progressive Peripherals and Software is a special graphic program for altering images. It is not a drawing program, but it's designed to let you adjust the color, quality and visual effects of existing images. It is especially valuable for improving the quality of digitized pictures. With it you can bring out details, emphasize the edges of images or alter their overall contrast. You can even use it to create abstract images using solarization techniques. One of the most valuable uses I've found for *PIXmate* is to convert color graphics or digitized photographs to black and white before bringing them into a DTP layout. All of the publishing programs will make this conversion for you, but too often their fixed conversion saves unimportant detail at the expense of important detail. With a program like *PIXmate*, you decide what is important and what can be trashed.

One of the most useful (and most expensive) graphic aides I've added to my own DTP system is R&DL's graphic tablet, stylus and driver software called *AProDraw*. First let me explain the graphic tablet. The tablet (a standard Summagraphic board like those used by Macintosh owners) is a 16×16-inch board that comes with a drawing pen (stylus) and driver software. The inner 12-inch square of the board is sensitive to the stylus' location. Wherever you touch the inner square with the stylus, the on-screen pointer moves to the corresponding spot on the screen. The stylus, in effect, becomes your mouse and the tablet mirrors your screen. What makes this so valuable to someone importing graphics is that you can tape a drawing or any graphic on the tablet, activate the stylus (the mouse is still active too) and then use almost any graphic package (like *DeluxePaint II* or *DeluxePhotoLab)* to trace the image into your system. After it has been captured, it can be edited, saved as an IFF file and imported directly into your publishing document. You are probably asking: why not just digitize the image with a video camera? The results of my attempts to digitize a line drawing have been mixed. Some have worked great, but too often the digitizer tried to interpret the white background as shades of grey. When this hap-

pened, I had to adjust the color balance with *PIXmate* or *PhotoLab*, a process which (with simple images) too often took more time than just tracing them with *AProDraw*.

The only negative aspect of the board is that the driver works through the serial port, so you have to disconnect it to use a modem or buy a switching box to toggle between the two.

ComicSetter from Gold Disk is a new stand-alone graphic program that lets you create, save and print panels like those you see in a good comic book. These same panels, or single cartoons can be included in your documents to give the reader a chuckle.

One More Product

Electronic Arts has been a driving force in developing powerful graphic programs for the Amiga, so it is understandable that a lot of the rumors in the industry centers around when EA will released a desktop publishing program for the Amiga (they have already released two for the 64). At this writing, the folks at EA say no dedicated desktop publishing program is in the works. So what about the rumor? The rumored contender will be an update of *DeluxePrint*.

By the time you read this *DeluxePrint II* should be on the market, but rather than a publishing program comparable to those mentioned here, it will instead be a layout and printing utility—a sort of "New and Improved" *DeluxePrint*. It will include support of the IFF format, more fonts, a graphic Editor and support for color printers. For those interested in printing posters, greeting cards, labels, letterheads, fliers, etc., *DeluxePrint II*'s power may be sufficient. It is without question the most modestly-priced publishing program, but it only begins to approach the power of dedicated desktop publishing programs. But for some users, it may have all the computer-created publishing power they'll ever need. (**Editor's Note:** Electronic Arts is now distributing Gold Disk's publishing programs.)

Going To Press

Regardless of which desktop publishing program you are using, the quality of your final printout will depend heavily upon your printer. The current batch of Amiga DTP programs will work with any Preferences-driven printer, plus they all support PostScript-compatible printers (built-in or available via an add-on module). This means that getting a hard copy of your document is simple.

Unfortunately, all printers are not created equal, and while a nine-pin dot matrix may give you excellent results with your word processor, chances are you are going to be disappointed with what you see when your DTP document is dumped to it. Professional printouts require densely-packed dot patterns that form detailed graphics and smooth-edged text—beyond the ability of most dot matrix printers. Deciding which printer will deliver the results you (and your clients) demand is a major dilemma for anyone investing in a serious desktop publishing system.

The hands-down choice to insure printout quality is a PostScript-compatible laser printer. PostScript is not a brand of printer, but the name of the language these printers understand. The power of PostScript-compatible printers is that they can print pages of graphics and text at 300 dots per inch. But what makes them equally appealing to the end user is the way they handle fonts. Rather than having to download specific fonts and sizes to match the ones in your documents, PostScript will translate and scale fonts to match. If you have been turned off by boxed graphics and fonts that look like they were designed with pinking shears, you will be happy with the smooth translation PostScript printers perform. Unfortunately, these beautiful machines only come at a beastly price. The LaserWriter, for example, retails for $4900 (more than ten times what my dot matrix printer cost).

The next step down would be a Hewlett-Packard LaserJet (or clone). These machines turn out equally impressive text and are fast, but they are limited by the resolution and quality of the graphics they can handle. You may be able to work around those two limitations, but the most annoying restriction of H-P-type printers is the way they handle fonts. You are restricted by the number and size of the fonts you can include on each page. Without the PostScript language to translate the font information sent to it, the machine looks instead for a resident font with the same name and size as the one your document is sending. If you can live with these restrictions, you can cut the cost of a laser printer in half. The least expensive H-P LaserJet retails for around $2500.

Printing Alternatives

Before you invest in a laser printer you might want to consider taking your documents to a printing service. Most small publishing businesses which print things like letterhead and business cards do much of their work on computers using laser printers, and most of these will publish your files for a fee. Unfortunately, most currently use either Macintosh or IBM computers (both entered the DTP field before the Amiga). If you can find one using an Amiga system (the number is sure to grow) chances are they will sell you time on their system for as little as one dollar per page.

If you can't find a print shop with an Amiga and a laser printer, there is one other possibility you might want to explore before hocking the family car for a PostScript printer. If your DTP program supports PostScript (all do or can be updated to do so), you can print the file to disk as a PS file instead of sending it to your printer. Then, using a program like *DOS 2 DOS* you can convert the Amiga file to an MS-DOS file which an IBM DTP program supporting PostScript should be able to send to a printer. I talked to several sources who believed this approach would work, but unfortunately none of the shops in my area use IBM and PostScript printers. (I almost convinced the salesman at ComputerLand to try it for me. But the deal fell through when he agreed to hook his demo system up to a PostScript printer only if I agreed to buy the printer if it did work.) This approach is not a solution to the expensive PostScript problem, but if you already own *DOS 2 DOS* it is an avenue you might want to explore.

If you want a color printout, your choices of printers are limited. Of the few I've seen, only the Hewlett-Packard PaintJet delivers results worth considering for serious DTP applications. But the real cost problem with creating documents in color is not buying a printer, but duplicating your pages. If you need just a single copy of your document and you are happy with the results your color printer delivers, you are home free. But if you are going to distribute hundreds or thousands of copies of your publication, you must take your finished layout to a commercial printer to be duplicated. Here you'll quickly find out just how expensive color ink can be. For every extra layer of ink (black plus yellow, magenta and cyan) your document requires, you can expect the price to nearly double. It is true that color carries attention-getting impact, but it will have an equally dramatic impact on your checkbook.

If it is so expensive, then why consider color? Effectively used, color can increase sales (assuming you are selling your pub-

lication). At the newspaper where I work, studies have shown the effect of color on rack sales of newspapers. A customer's eye is caught more quickly by well-done color than black and white, and that translates into increased sales—every day that we include color on the front page, rack sales increase. After the study front-page color became mandatory. Color does cost more, but increased sales can often justify its use.

There will always be a better product, a cheaper price, a better business atmosphere somewhere on the horizon.

Lacking the funds for a laser printer, your best bet is a 24-pin dot matrix. Depending upon the program driving the printer, your results will be either acceptable or embarrassing, but rarely professional. These printers have one enduring quality—they are affordable (my Star NB24-10 cost under $400). But even at their best, dot matrix printers do not approach the beauty of a laser printout. For school newsletters, handouts, inter-office documents, etc., they may supply all the visual punch you need, but for professional printouts, the present crop of dot matrix printers just can't produce.

The Dreaded C: Cost

How much is all this going to cost you? That of course depends upon how professional you want your results to appear and how much equipment you already have on hand.

Entry-level Setup

Depending upon which desktop publishing program you buy, you may be able to get by with as little as 512K memory, but to avoid a lot of disk changing, you'll want to expand your system's memory to one megabyte or more as soon as possible. All the current DTP programs allow you to type text directly into a layout, but to get serious and to save a lot of time, you'll need a good word processor. The only other requirement is a printer. With that inexpensive system you could begin your publishing career. You wouldn't be able to compete with *USA Today*, but you should be able to produce some decent-looking documents. Going this route, you could get your feet wet for under $200, assuming you already have an Amiga, monitor, word processor and printer.

If you are starting from scratch, a minimum setup using an Amiga 500 with external drive and monitor, a copy of *Publisher Plus* (the least expensive), a word processor and a dot matrix printer would probably cost between $1500 and $2000.

Professional Set up

At the most professional level of desktop publishing you would want an Amiga with expanded memory (2MB or more), a 20 or 40MB hard disk drive, a copy of *Professional Page,* a few font and clip art disks, and a good word processor to begin. Add to that a couple of graphic programs like *DeluxePaint II* or *PhotoLab,* the *AProDraw* tablet, a terminal program and a modem to import files from other systems. If you intend to include photographs in your documents, you'll either need software and hardware (like Digi-View) to digitize the images or be willing to pay a print shop to screen them (convert them to printable dot patterns) so you can physically insert them in your layouts.

All that would give you a good platform to begin, but you would still need a printer, and for a commercial operation that means a laser. You could save some money by going with an H-P (Hewlett-Packard, bottom line cost—$2700), but eventually you'll want one which supports the PostScript language, (*that* purchase will chip at least $4500 from your savings account), and we're still talking about black and white documents (if you want color, you're talking really big bucks). And no publishing shop is complete without a photocopier and enameled paper for your finished documents. With such an extensive setup you could easily spend $10,000 or more. But such a setup would also allow you to compete with anyone in the desktop publishing industry.

If you have any reservations about your needs for desktop publishing capabilities, I suggest you begin with a bare-bones setup (with a good printer) and add to it as demands increase and profits appear.

Summary

Whether you just want to turn out an occasional give-away newsletter or publish for profit, you can do it all with your Amiga and the right add-ons. How seriously you become involved is restricted only by your checkbook and talent. Desktop publishing is not for everyone, but if you have information or ideas you need to share, desktop publishing is an application you should seriously consider. For professional appearance and user-controlled power all at an affordable price (compared with traditional publishing methods) there is nothing on this earth which surpasses good desktop publishing.

Establishing a successful desktop publishing business takes time, training, tools and money. Having the best hardware and software to do the job doesn't guarantee success. The bottom line is you—it takes writing, artistic and publishing skills as well as good business sense and a willingness to work hard to succeed. Don't get into desktop publishing just because it looks like fun (even though it can be). The hardware and software to publish professional pages is available today, but to orchestrate all that into a professional product requires skills: writing, editing, page design, selling and business management. If you have the right stuff, operating your own desktop publishing shop can not only be satisfying, but profitable. It is not uncommon for a successful desktop publisher to recoup his or her expenses in the first year of operation and bank profits in excess of $20,000 or more in the second year.

The Never-ending Story

The pursuit of the ultimate DTP system is never-ending. There are and will always be new products, improved products, unique products which you will want to add to your system to make it perform faster, squeeze out more quality, reduce expenses or bypass production bottlenecks. There was a time when an electronic typewriter was the ultimate personal publishing machine; today those machines are reserved for mundane chores like addressing envelopes. A similar fate will someday overtake today's computers and desktop publishing programs. But for now (and probably far into the future) desktop publishing is a powerful force in the publishing industry. When or if you get involved should be determined by your personal situation. But if you keep waiting for the ultimate DTP program, or the right-priced printer, or just the right business atmosphere, your time will never come. There will always be a better product, a cheaper price, a better business atmosphere somewhere on the horizon. The products for professional, profitable desktop publishing are here today; what you do with these opportunities will influence your own horizons.

Oh yes, for those wondering what happen to Zak, the would-be small-town publisher? He left the *Times* about a year

after the AP story broke and has now surrounded himself with CRT's, keyboards and at least one laser printer and is absorbed in the dream he had in 1985—personal desktop publishing. He hasn't returned to his hometown yet to start a newspaper, but he seems to be on the right road—he edits and publishes two weekly newsletters entirely with desktop publishing products.

In developing this article I tested and used dozens of programs some of which I mentioned by name. Those mentioned do not begin to exhaust the powerful publishing aides available for the Amiga user. They are simply the ones with which I am familiar. You may find others you prefer or which are even superior to those I use. The importance is not the name of the program you use, but whether it will perform the task you require.

If you decide to join the ranks of Amiga desktop publishers, there are dozens of books which can help you fine tune your system and artistic skills. Two I can recommend:

The Art Of Desktop Publishing (2nd edition) by Bove, Rhodes and Thomas; published by Bantam Computer Books

Art Directors Annual, a collection of winning newspaper, magazine, promotional and illustrations by Watson-Guptill Publications.

Companies

Brown-Wagh Publishing Co.
16795 Lark Avenue
Suite 210
Los Gatos, CA 95030
(408) 395-3838
Publisher Plus $99.95

Central Coast Software
268 Bowie Drive
Los Osos, CA 93402
(805) 528-4906
DOS 2 DOS $55.00

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
DeluxePhotoLab $149.95
DeluxePrint II $79.95
DeluxePaint II $129.95

Gold Disk
2171 Dunwin Drive, #13
Mississauga, Ontario
L5M 2C2
Canada
(416) 828-0913
Professional Page $395.00
PageSetter $149.95
ComicSetter $99.95

Infinity Software, Inc.
1144 65th Street
Suite C
Emeryville, CA 94608
(415) 420-1551
Shakespeare: The Page Integrator $225.00

InterActive Software
2521 S. Vista Way
Suite 254
Carlsbad, CA 92008
(619) 434-5327
Calligrapher $129.95

MicroSearch
9896 SW Freeway
Houston, TX 77074
(713) 988-2818
City Desk $199.95

NewTek
701 Jackson, Suite 3B
Topeka, KS 66603
(913) 354-1146
Digi-View $199.95

Progressive Peripherals & Software
464 Kalamath Street
Denver, CO 80204
(303) 825-4144
PIXmate $69.95

R&DL Productions
11-24 46th Avenue
Long Island, NY 11101
AProDraw $549.00
(12 × 12 tablet and stylus)

SoftLogik Corporation
11131 South Towne Square,
Suite F
St. Louis, MO 63123
Publishing Partner Professional $199.95

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> *Excellence!* allows for compatibility with almost every type of printer on the market.

which will load the document as it appeared when last saved.

Excellence! will support any document written with the *Scribble!* word processor without any modification.

To add some spice to your text, you may have up to 120 fonts at a time, depending upon available memory. The number of different fonts available to you is only limited by the number of fonts on the Workbench disk.

One of the nicest features of *excellence!* is its ability to import low-, medium- and high-resolution IFF graphics into your document. These are treated just like text, allowing you to scale and clip the picture the way you want. The only thing you can't do is search and replace them within your document.

To give your screen a professional appearance, carriage returns, margin boundaries and special characters are hidden until you choose otherwise. The page preview mode allows you to display your document on the screen as it will appear in print (provided you are using the interlaced screen mode).

Then Comes the Clean-up

For a close-to-perfect document, use the 90,000-word spelling checker, thesaurus and grammar checker. You can store the dictionary in RAM and check spelling as you type (this requires one megabyte). If a word is not found in the dictionary, you may choose to create your own user-dictionary. The thesaurus gives you antonyms and synonyms for any word in your document—just highlight the word and then search for the synonym or antonym you want. Once your document is finished, you may wish to use the grammar checker to search for common errors. When finished examining your document, it will list the number of problems, the document's reading level, statistics (e.g., total number of words, sentences, etc.), and much more.

An Excellent Print

When you are ready to print your document, choose from four types of printing modes: Normal (prints in WYSIWYG format, including fonts and graphics), NLQ (prints only text for near-letter quality), Draft (prints only text, quicker than NLQ but not as good print quality), and PostScript. The PostScript option allows you to print to any PostScript-compatible laser printer. You can also choose the print density, paper type, number of copies to print, etc. One of the nicest features of *excellence!* is its ability to dump a document to any printer available in Preferences. This allows for compatibility with almost every type of printer on the market.

Recommended System

Excellence! is an extremely powerful word processor that requires a powerful Amiga system. You will need the following equipment to take advantage of *all* the features: two disk drives, one megabyte of memory and a good printer. Although the manual states that you *can* use only one disk drive, you'll be doing a lot of swapping.

You *can* use *excellence!* with only 512K, but there are some things you should be aware of. First, you will run out of memory if you try to check grammar on a document greater than four pages. Second, the spelling checker needs to be loaded into RAM in order to maintain its speed, and with 512K you will notice typing delays while it checks your work. These are the only major disadvantages I have encountered while working with *excellence!* in 512K. However, I highly recommend you have the extra memory even though it is not required.

Summary

While working with *excellence!*, I have encountered typing delays of up to 30 seconds when cutting, pasting and deleting blocks of text. Also, the general operating speed could be increased as well. The MSS technical support team attributes the sluggishness to the fact that it's a bit-mapped word processor, so everything has to be constantly re-drawn. However, there is a new version in the works which will not only increase the operating speed but also add more options.

Excellence! combines the powerful features of both a word processor and desktop publisher into one package! You will find many nice functions and options that are available on no other word processor. To receive free technical support from MSS, be sure to send in your warranty card. Whether you are an amateur writer, professional writer, or college student, *excellence!* combines the right features for everyone!

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pay many tolls along his road to success.

First, let's look at the title character. As the name would imply, your bird is noted for land speed. In a word, this fowl is fast. With rocket acceleration, incredible quickness and superb cornering ability, the Road Runner might be considered the Formula Racer of the bird kingdom. Now you see him, now you don't. But like his auto counterpart your hero also needs some "gas" to keep moving; and that's the catch.

As your winged wonder is buzzing down the road, you will notice that he will periodically come upon hefty piles of birdseed. This is your Runner's food fuel. By passing directly over the grain, your bird can quickly gobble the grub, keeping nourished and fit. But if the heat of the hunt causes your surrogate to bypass a few too many of these piles, his energy will eventually be sapped, leaving him collapsed helplessly on the pavement—a sitting duck, of sorts. To help you keep abreast of the Road Runner's hunger pains, a Seed Meter—which uses a handful of rapidly-draining bowls of seed to represent your bird's waning verve—is provided at the screen's upper edge. Keep an eagle eye on the seed meter.

Now in a foot race, Mr. Coyote wouldn't stand a chance against your speedster. But this crafty creature, realizing his limitations, has equipped himself with all kinds of contraptions to try to even the odds. He'll come at you on rocketback, skateboard, supercharged pogo stick and booster jets, using everything from land mines to aerial bombs to do you in. And talk about resilience, Wile E. can be run over, blown up and shot a dozen times, and he'll just pause for a second, shake it off and keep on coming. You can't afford to slow down for a second. Even a glancing blow from one of his persistent paws will snatch away one of your five lives.

But even with this dangerous Coyote on his tail, the Road Runner can't spend too much time looking over his shoulder, for what's approaching can be just as deadly. The highway course is divided into four separate sections, each presenting its own pitfalls. The initial segment starts you off running headlong into oncoming traffic on a four-lane spread, asking you to pick up seed while dodging the bumpers of speeding trucks. The next area contains a narrow zigzag course to be negotiated, followed by a length of road in a nonstop falling rock zone.

Survive this and it's on to phase three, a frustrating stretch of intersecting highways that offers very few through streets and plenty of dead ends. You'll find yourself retreating more than advancing as you run into a multitude of impasses, including a few ball-spitting cannons which have been included to keep you on your toes. And then there's the final section, which first pits you against Wile E. the bombardier, and then tests your leaping ability over a series of hair-raising ravines. One wrong move, and it's an unscheduled free fall. If you're lucky enough to survive this four-part trial, you'll get to start it all over again with added obstacles, like more trucks, rocks and land mines. The going can get pretty rough, and chances are that you'll run out of lives long before you run out of road.

Road Runner's scoring system is well designed, leaving enough strategic latitude to keep you forever scheming. Not only can you earn points by avoiding hazards, collecting seed and covering ground, but you will also be rewarded if you can get any of the traps to backfire on the Coyote. Sidestep an onrushing truck at the last second, and your nemesis in pursuit is bound to get grilled. Jump over a cannon ball and see if it doesn't help Wile E. cut down his waistline. And then there's my favorite setup, where you rush at a land mine and quickly cut away, watching the wide-eyed Coyote skid by and trigger the fireworks. What fun! It's just like the cartoon.

As far as visuals go, Mindscape hasn't missed a detail. The colors are perfect, with brown and yellow hues painting a sandy desert against a clear blue sky. The landscape is dotted with all the appropriate ground-hugging vegetation and rocky outcrops, with various imposing stone formations climbing to backdrop every scene. And all these beautiful graphics are accented by some spectacular animation. It's all here: pinwheeling legs, turning heads, reaching arms and flapping ears. And if your bird does slip and inadvertently set off an occasional explosion, you'll get to witness one of the funniest shocked reactions ever portrayed on a computer monitor. It's terrific stuff, all presented with a musical sound track covering everything from "Flight of The Bumble Bee" to the famed Looney Tunes sign off. And yes, when prompted, your surrogate will even let out a engine-like "p-u-u-n-c" or his signature "Beep-Beep." It's a thoroughly professional job.

Move quick and act like Wile E. Coyote. This is a *Road Runner* you definitely want to catch. ■

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tax and options with most versions of ARC.

Besides the obvious usefulness of combining and compacting files for telecommunications work, ARC can be a very handy utility for other purposes too. I usually have trouble remembering how to use all the various utilities I collect from the boards, so I try to put a bunch of documentation files into one archive file. Most versions of ARC include an option that lets you display or print a file from within an archive file without extracting the file and writing it to disk.

So you can keep a number of documentation files handy without taking up much space on your disk. If you have several documentation archives and forget what files are where, you can always list the contents of any archive to find the file you want. Plus, if you get a later update of a program, you can replace the existing copy of any given file in an archive with the update option of ARC.

I'm sure this only scratches the surface of what you can do with the ARC utility, but I hope it helps get rid of some of the confusion over how to handle file archives downloaded from the system. There are several other similar utilities in use, such as LYNX, LIBrary, Compress and Uncompress, self-dissolving archives, and others, each using specific file suffixes to indicate which utility was used to create the file. Always be sure to check a file's comments and description on Q-Link to see if a special version of a utility is needed. If you're still having troubles, check the Beginner's section of Q-Link for additional help.

On the other hand, when uploading archive or compressed files to Q-Link, be sure to use the proper file suffixes and include a quick comment in the file description to indicate how the file was created. Also, try to keep the size of archive files to a reasonable length. It's usually easier to download a few medium sized files than one very large file. If unsure how big a given archive file will be, you can always create it in stages. The ARC utility allows adding files to an existing archive file. So put a few files into the original archive file and check the file size as you add the additional files. If you go a little too far, you can even delete a file from an archive file.

Guess that's it for this month. Please let me know if you have any thoughts or suggestions for future columns. As usual, you can reach me via E-Mail to "RBaker" almost daily. By the way, I'm now on PC Link too where you can reach me via E-Mail to "RBaker PC". ■

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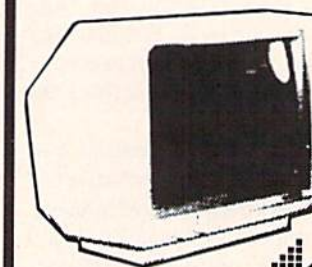
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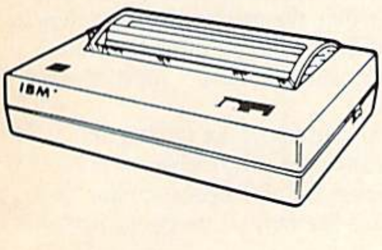
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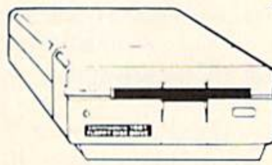
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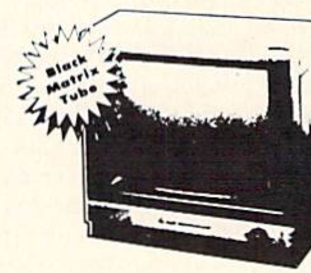
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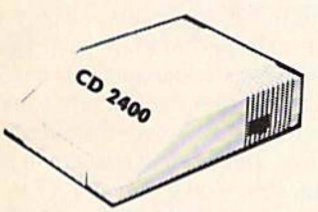
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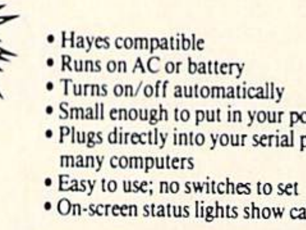


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The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME
"[CLEAR]" = SHIFTED CLR/HOME
"[DOWN]" = CURSOR DOWN
"[UP]" = CURSOR UP
"[RIGHT]" = CURSOR RIGHT
"[LEFT]" = CURSOR LEFT
"[RVS]" = CONTROL 9
"[RVOFF]" = CONTROL 0
"[BLACK]" = CONTROL 1
"[WHITE]" = CONTROL 2
"[RED]" = CONTROL 3
"[CYAN]" = CONTROL 4
"[PURPLE]" = CONTROL 5
"[GREEN]" = CONTROL 6
"[BLUE]" = CONTROL 7
"[YELLOW]" = CONTROL 8
"[ORANGE]" = COMMODORE 1
"[BROWN]" = COMMODORE 2
"[L. RED]" = COMMODORE 3
"[GRAY1]" = COMMODORE 4
"[GRAY2]" = COMMODORE 5
"[L. GREEN]" = COMMODORE 6
"[L. BLUE]" = COMMODORE 7
"[GRAY3]" = COMMODORE 8
"[F1]" = F1
"[F2]" = F2
"[F3]" = F3
"[F4]" = F4
"[F5]" = F5
"[F6]" = F6
"[F7]" = F7
"[F8]" = F8
"[POUND]" = ENGLISH POUND
"[SHFT ^]" = PI SYMBOL
"[^]" = UP ARROW

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT. .) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>86200 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>59382 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
   1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
```

END

Programming/Graphbusters!

Continued from page 86

```
1240 GET A$'BCGA
1250 IF A$=""THEN 1240'DGQD
1260 IF A$="Y"THEN 150'DFGE
1270 PRINT"[CLEAR]THANK YOU FOR
     PLAYING.":STOP'CBGK
1280 PRINT"[CLEAR]":PRINT TAB(14);
     "GRAPHBUSTERS!"'DFAK
1290 PRINT:PRINT TAB(13);
     "BY ROBERT ROSSA"'DFVL
1300 PRINT'BACV
1310 PRINT"EACH TIME YOU MOVE,
      THE EDGE YOU"'BAGG
1320 PRINT"USED DISAPPEARS.[SPACE2]
     YOU WIN IF YOUR"'BAKH
1330 PRINT"OPPONENT CAN'T MOVE.
     [SPACE2]MOVE NUMBERS"'BAFI
1340 PRINT"ARE AS SHOWN:"'BAZE
1350 PRINT'BACB
1360 PRINT TAB(17);"7 0 1"'CEBE
1370 PRINT TAB(17);" [SHFT M,SHFT -,
     SHFT N]"'CEMH
1380 PRINT TAB(17);"6[SHFT C,SHFT W,
     SHFT C]2"'CEJI
1390 PRINT TAB(17);" [SHFT N,SHFT -,
     SHFT M]"'CEMJ
1400 PRINT TAB(17);"5 4 3"'CEFY
1410 PRINT'BACX
1420 PRINT"PRESS G TO GIVE UP."'BAGE
1430 PRINT"PRESS A KEY TO START"'BARG
1440 GET A$:IF A$=""THEN 1440'EJGF
1450 RETURN'BAQC
```

END

Programming/Boggling

Continued from page 94

```
     RVS,SPACE2,CMDR *,RVOFF]","[RVS]
      [RVOFF,SHFT POUND,CMDR *,RVS]
     [RVOFF]"'BEVP
1050 REM ****** 36-40'BLHA
1055 DATA "[RVS] [RVOFF,SPACE2,
     SHFT POUND]","[RVS] [RVOFF] [RVS]
      [RVOFF,SHFT POUND]","[SPACE4]",
     "[SPACE4]","[SPACE4]"'BEGJ
1060 REM A B C D E'BFVA
1065 DATA 1,2,3,2,2,  4,2,4,2,5,  1,2,
     6,2,7,  4,2,2,2,5,  3,6,3,6,
     3'BYNN
1070 REM F G H I J'BFVB
1075 DATA 3,6,3,6,6,  1,6,21,2,7, 2,2,
     3,2,2,  3,8,8,8,3,  9,9,9,2,
     7'BAAO
1080 REM K L M N O'BFQD
1085 DATA 10,11,12,13,14,6,6,6,6,3,15,
     16,17,2,2,18,19,20,21,22,1,2,2,2,
     7'BMWS
1090 REM P Q R S T'BFPE
1095 DATA 4,2,5,6,6, 1,2,2,10,23, 4,2,
     5,13,14, 1,6,34,9,7,  3,8,8,8,
     8'BEKR
1100 REM U V W X Y'BFPV
1105 DATA 2,2,2,2,7,2,2,2,24,25,2,2,
     29,35,28,15,24,26,27,28,15,24,25,
     8,8'BMEL
1110 DATA 3,30,31,32,3'BMVW
```

END

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